Deputy Assistant Secretary of Defense/Deputy Chief Information Officer (DASD (DCIO))

Electronic Business Operations
Quality of Service and Barriers Study
Final Report

McLean, VA
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BOOZ·ALLEN & HAMILTON INC

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EXECUTIVE SUMMARY

THE STUDY PERFORMED A "QUICK LOOK" ASSESSMENT OF SERVICE QUALITY ISSUES ENCOUNTERED WITH WEB-BASED COTS APPLICATIONS SUPPORTING TWO DOD E-BUSINESS INITIATIVES

- DoD is deploying multiple e-Business initiatives involving web-based COTS applications in many areas to reduce costs and improve efficiency throughout the Department
- The Office of the CIO/ASD C3I received feedback that Quality of Service (QoS) problems have hampered the rollout of two e-Business initiatives supporting two functional areas
  - USD A&T Government Purchase Card Program
  - Assistant Deputy Under Secretary of Defense (ADUSD) Transportation Policy Program
- DOD CIO commissioned a rapid, 60-day study to better understand potential performance problems and identify potential impediments to DoD e-Business implementation
- The reports of QoS problems from DoD staff addressed a wide range of potential causes
  - Slow application response times
  - Inability of users to access the web application sites
  - Local barriers to acceptance
  - Potential local security concerns
- This breadth of QoS issues led to a working definition for Electronic Business Operations (EBO) QoS as "all aspects of a DoD user's interaction with an e-Business system which contribute to the system's effectiveness for that user, from the user's point of view"

THE MULTIPLE DIMENSIONS OF QUALITY OF SERVICE GENERATED A WIDE RANGE OF ISSUES IN FIVE KEY AREAS THAT FRAMED THE ANALYSIS

Strategy	• Did technical and operational guidance on e-Business implementation reach the end users? • Were the benefits of e-Business initiatives communicated to end-users?
Process	• Did the application support the business (payment) process at that location? What other business processes will be effected by this application? • What would need to change, or be done differently, at the local level to support the new process? • How did users view the ease of use of the applications, particularly with respect to commercial Internet sites? • Did the functionality of the web-based application support local business operations?
Technology	• What was the application response time and availability? What is the impact on application use and local business operations? • What are the hardware and software capabilities of the desktop platforms in use by the purchase card and transportation users at the bases? • What is the base area network and in-building LAN architecture model at that base? • What connectivity is provided to and within buildings housing the purchase card and transportation users?
Change Management	• How were local users prepared for implementation of the new systems? • How has training been provided, and what types of methods were used? • How effective is the customer support provided to the user?
Security	• What security issues were raised through implementation of these applications? • What information security measures are in place at the base? How are they managed? • Who drives or influences security policies impacting the base?

THE STUDY FOCUSES ON DEPLOYMENT OF WEB-BASED COTS APPLICATIONS INTEGRATED INTO AN E-BUSINESS PARTNER'S SERVICE OFFERING TO THE DOD

- The Transportation and Purchase Card web-based COTS applications are integral parts of US Bank and Citibank financial service offerings to the DoD; DoD neither pays for the software nor has rights to the software beyond access for the specific services provided by the banks

- Because web technology and Internet access greatly reduce traditional technical barriers to entry, many more e-Business initiatives can address a wide range of process automation and modernization opportunities across the Department

- Like conventional COTS software implementation efforts, these e-Business initiatives face traditional challenges to implementation
  - Managing impacts on user business processes
  - Gaining user buy-in
  - Testing system functionality
  - Training users
  - Stakeholders both within and beyond DoD

- The Transportation and Purchase Card e-Business initiatives present new software implementation models to DoD, and present new challenges
  - Applications reaching tens or hundreds of thousands of DoD users at all levels
  - Major role of commercial partners in providing service to DoD users
  - Multidimensional security risks
  - Coordination of OSD functionals and technology organizations

THE STUDY METHODOLOGY EMPHASIZED ON-SITE OBSERVATIONS OF E-BUSINESS IMPLEMENTATIONS AND STAFF INTERVIEWS AT SEVEN DOD INSTALLATIONS

- The seven DoD installations selected for visits represented a cross section of Services, Commands and critical DOD functions, however, may not represent the full range of EBO service quality problems
  - Army: Fort Eustis and Fort Polk
  - Navy: NAS Patuxent River, NAS Oceana, Norfolk Naval Base
  - Air Force: Dover AFB, Langley AFB
- The study focused on local e-Business application rollouts in two program areas
  - Government Purchase Card: CitiDirect from Citibank(Navy), CARE from US Bank (Army, Air Force)
  - Transportation: PowerTrack from US Bank (in use at 6 of the 7 locations)
- Discussions were held with OSD program management offices, DoD CIO e-Business officials, DISA, Military Service staffs, US Bank program staff, and base functional and IT staff
  - Purchase Card: Agency Program Coordinators (APCs), Authorizing Officials (AOs)
  - Transportation: Transportation Officers and specialists
  - IT: Local Base IT and network management (e.g., DOIMs, SC staff)
- e-Business application operations were observed and timed while in use by functional staff during site interviews using non-invasive and mutually agreed upon techniques
- Measurements of network latency to application hosts (CARE, CitiDirect, and PowerTrack), and general Internet throughput were made using the Windows traceroute utility and test file transfers, where permitted by local security policy

NOTE: Scope and duration of study did not permit extensive or invasive end-to-end performance measurement

ASPECTS OF OUR APPROACH WERE DRIVEN BY THE TIME REQUIREMENTS AND SCOPE OF THE TASK

- The OSD decisions to deploy the Transportation and Purchase Card systems were not revisited, and were assumed to meet relevant business needs within DoD

- The bases surveyed were selected to present a cross section of the DoD environment and provide insight into reported problems; site visits focused on application usage, experiences and IT environment at the end user location

- On-site data collection consisted of the following:
  - Feedback gained from interviews with DoD staff
  - Direct observations of application operation, availability and response times, network latency, and data transfer rates to commercial Internet sites

- Intrusive testing and network monitoring on base networks were not performed to avoid disruption of local transportation or purchase card business operations, and to minimize impact on base IT staff

- Based on the focus on two functional areas and seven site visits, the e-Business impediments and recommendations developed from this study likely represent a subset of potential service quality problems facing DoD

THE SITE SURVEYS PRODUCED DATA CONCERNING BOTH TRANSPORTATION AND GOVERNMENT PURCHASE CARD E-BUSINESS INITIATIVES, AND IT INFRASTRUCTURE SUPPORTING END USERS

- At Army and Navy locations slow response times experienced with a Government shipping system (ETA) often hindered use of PowerTrack for freight payment; the two Air Force locations demonstrated very different outcomes with respect to PowerTrack implementation

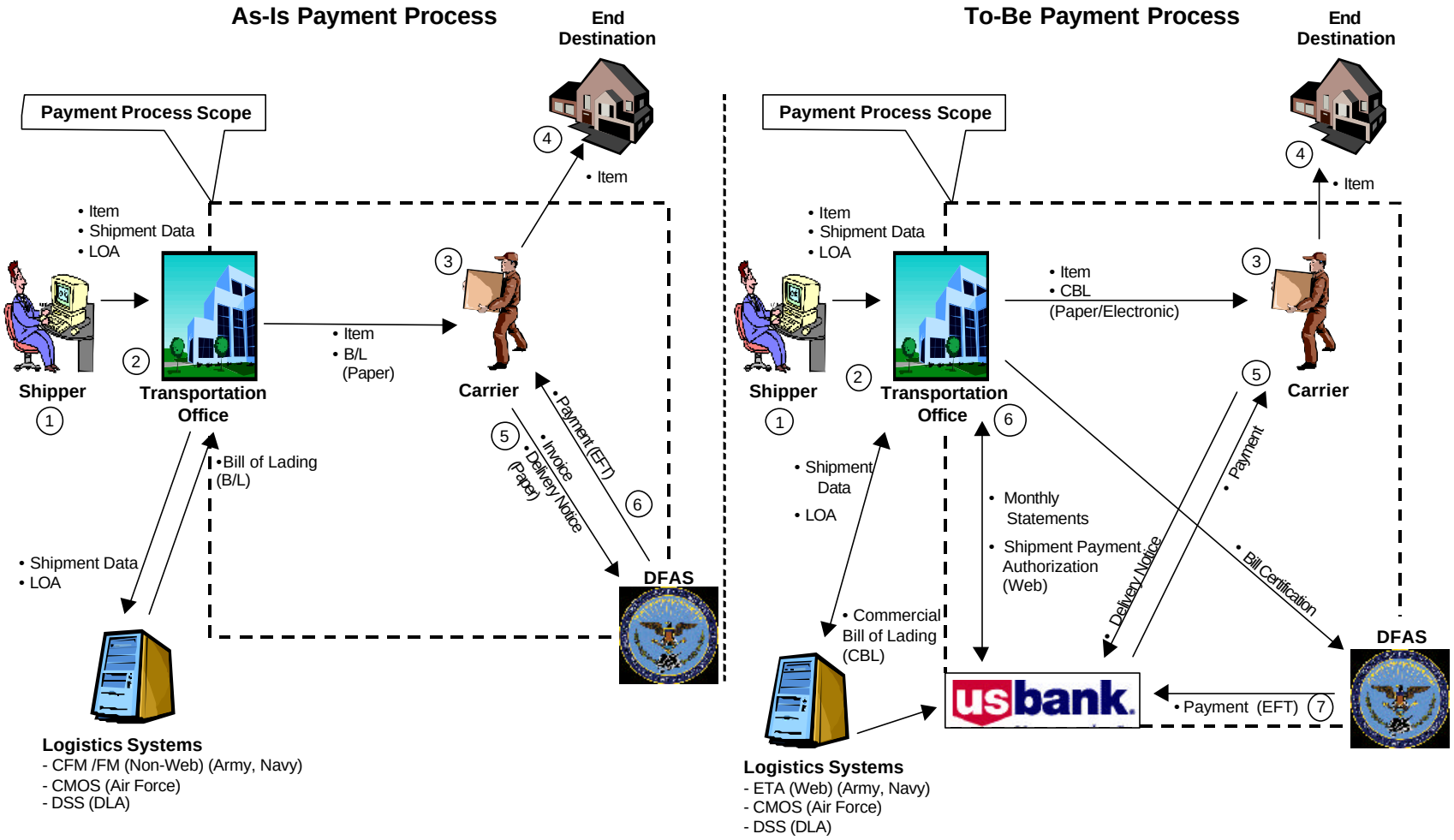
- Business process impacts, data integrity, and training issues have impacted rollouts of on-line purchase card statement approval and certification

- While slow response times were observed at most locations, no single element of IT Infrastructure under DoD control appeared to consistently prevent application access or cause slow response

- The following pages present detailed observations from the site visits in three areas
  - Transportation Initiative – PowerTrack
  - Government Purchase Card Initiative – CitiDirect and CARE
  - IT Infrastructure

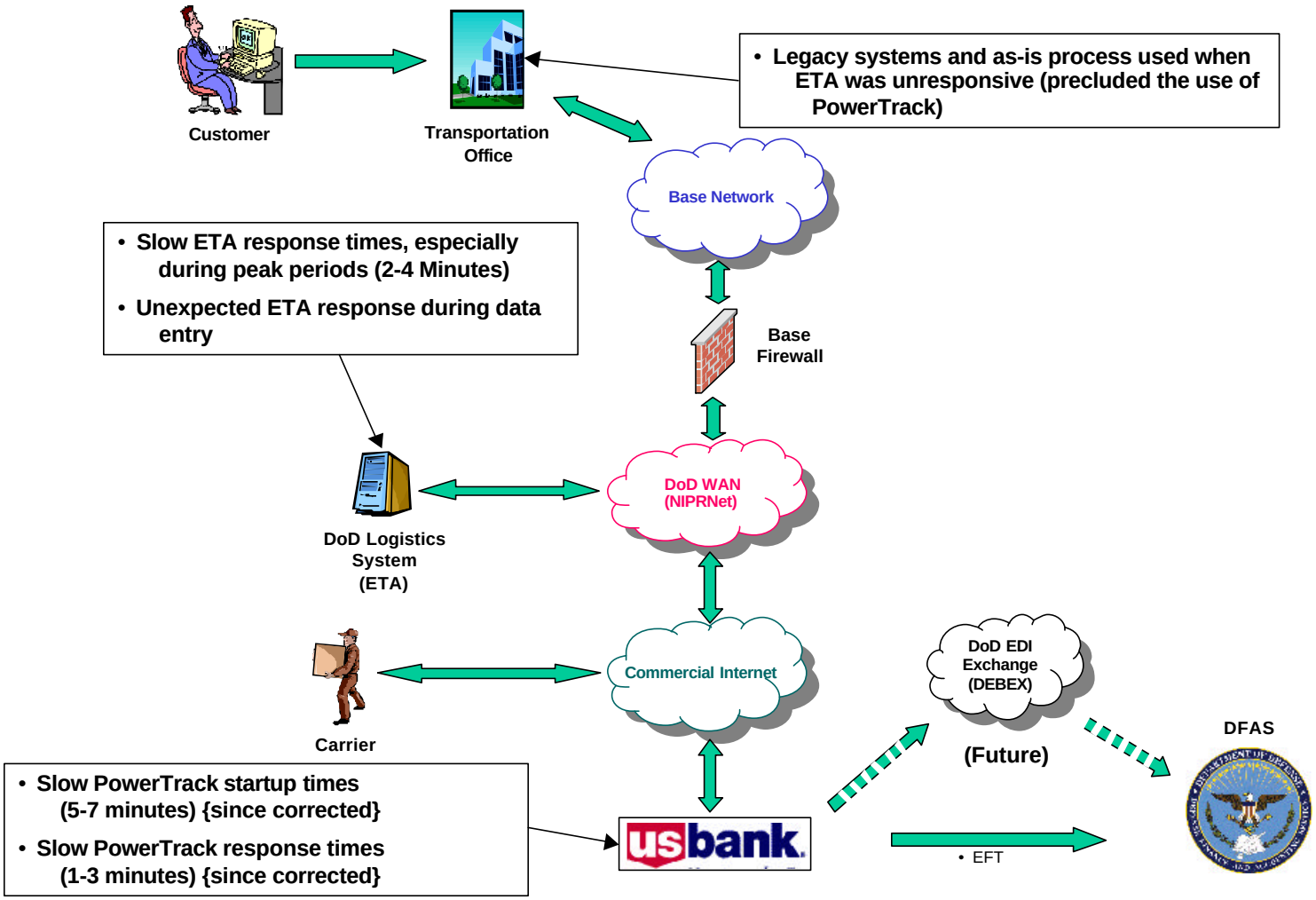
THE USE OF POWERTRACK REDUCES PAPERWORK AND MANUAL APPROVALS FOR PAYMENT OF DOD FREIGHT SHIPMENTS, RESULTING IN RAPID CARRIER PAYMENT AND ELIMINATION OF LATE PAYMENT CHARGES

TRANSPORTATION PAYMENT MODERNIZATION



AT ARMY AND NAVY LOCATIONS SLOW RESPONSE TIMES EXPERIENCED WITH A GOVERNMENT SHIPPING SYSTEM (ETA) OFTEN HINDERED USE OF POWERTRACK FOR FREIGHT PAYMENT

TRANSPORTATION / POWERTRACK OBSERVATIONS
(Army / Navy Locations)



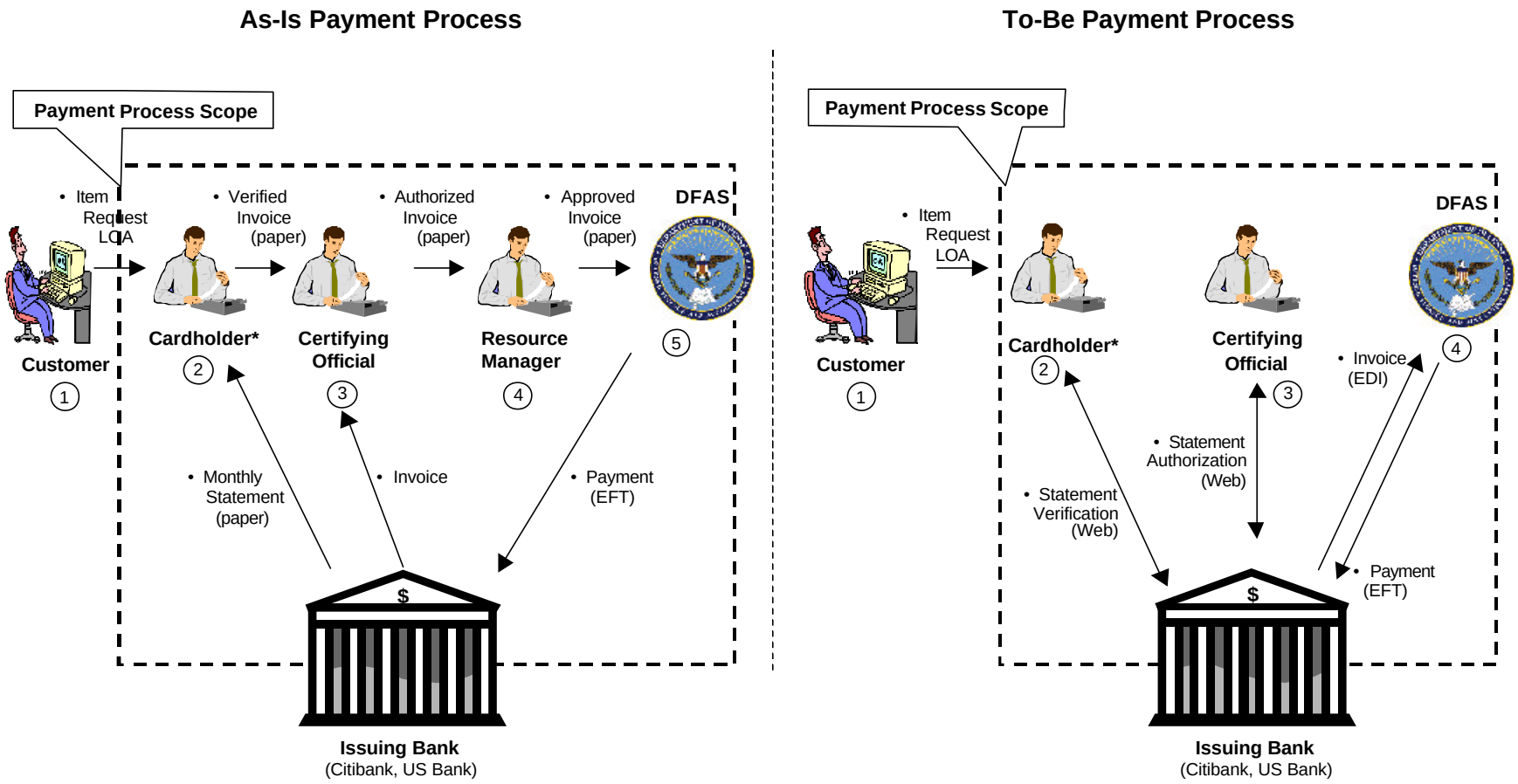
THE TWO AIR FORCE LOCATIONS DEMONSTRATED VERY DIFFERENT OUTCOMES WITH RESPECT TO POWERTRACK IMPLEMENTATION

- One location was using PowerTrack regularly for payment of all eligible shipments
  - The "To Be" freight payment process was implemented and working well at this location
  - PowerTrack access and response times at this location were far superior to all other locations in the study – for example, startup times were about 30-45 seconds versus 5-7 minutes at other sites
  - Earlier problems concerning links between CMOS (Air Force logistics system) and PowerTrack had been resolved

- IT staff at the second Air Force location blocked PowerTrack deployment over security concerns
  - Local staff had detected TCP port activation attempts from the PowerTrack server (managed by US Bank) to the PowerTrack client (residing on an Air Force user PC)
  - Local staff determined this to be a security risk, and decided to prevent deployment

IMPLEMENTATION OF THE EDI PURCHASE CARD PAYMENT APPLICATIONS IS EXPECTED TO REDUCE INVOICE PROCESSING COSTS, GENERATE INCREASED REBATES TO THE DOD, AND SUPPORT EXPANSION OF THE PURCHASE CARD PROGRAM BY ELIMINATING PAPER-BASED PAYMENT PROCESSES

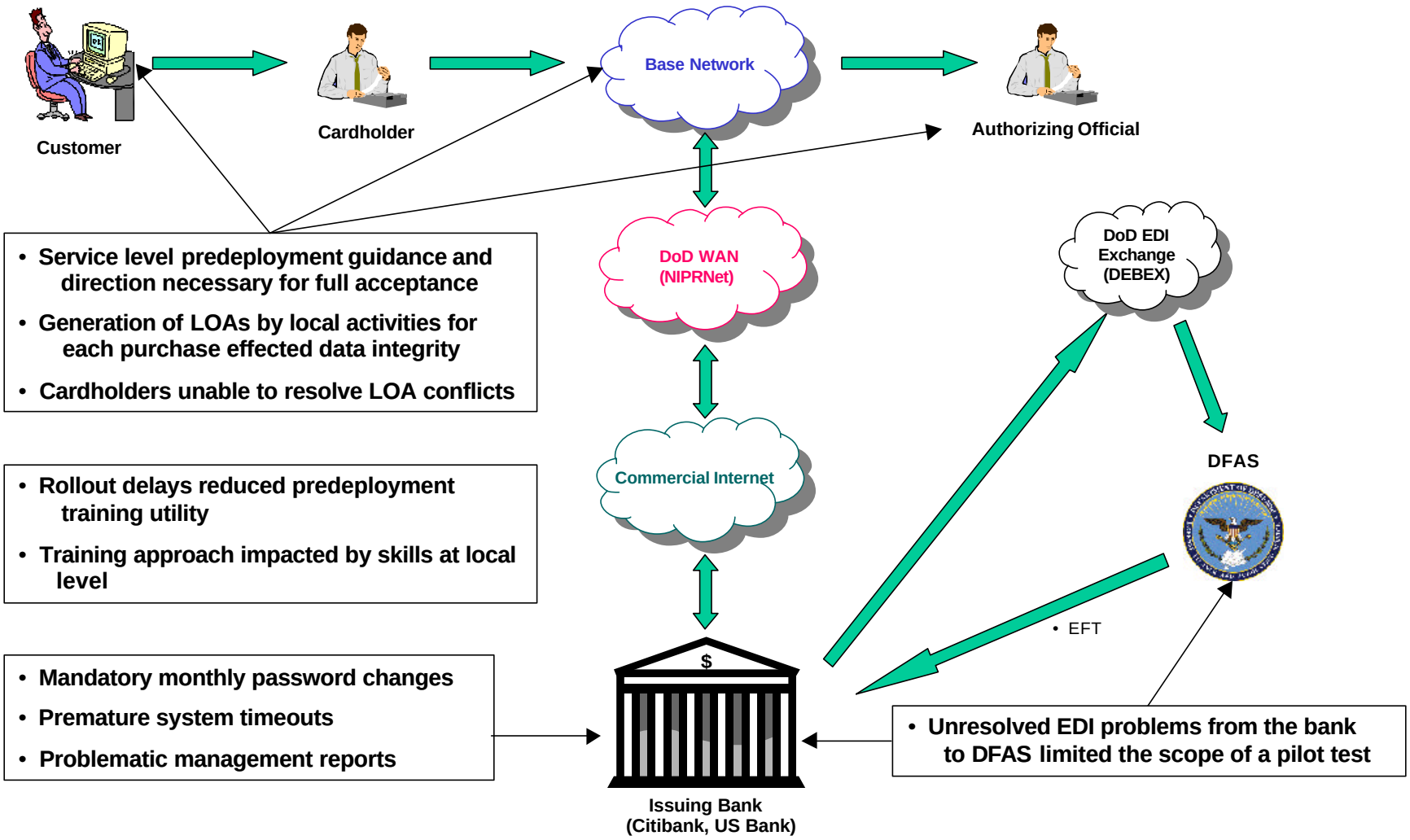
PURCHASE CARD PAYMENT PROCESS MODERNIZATION



*** Often customer & cardholder are the same person**

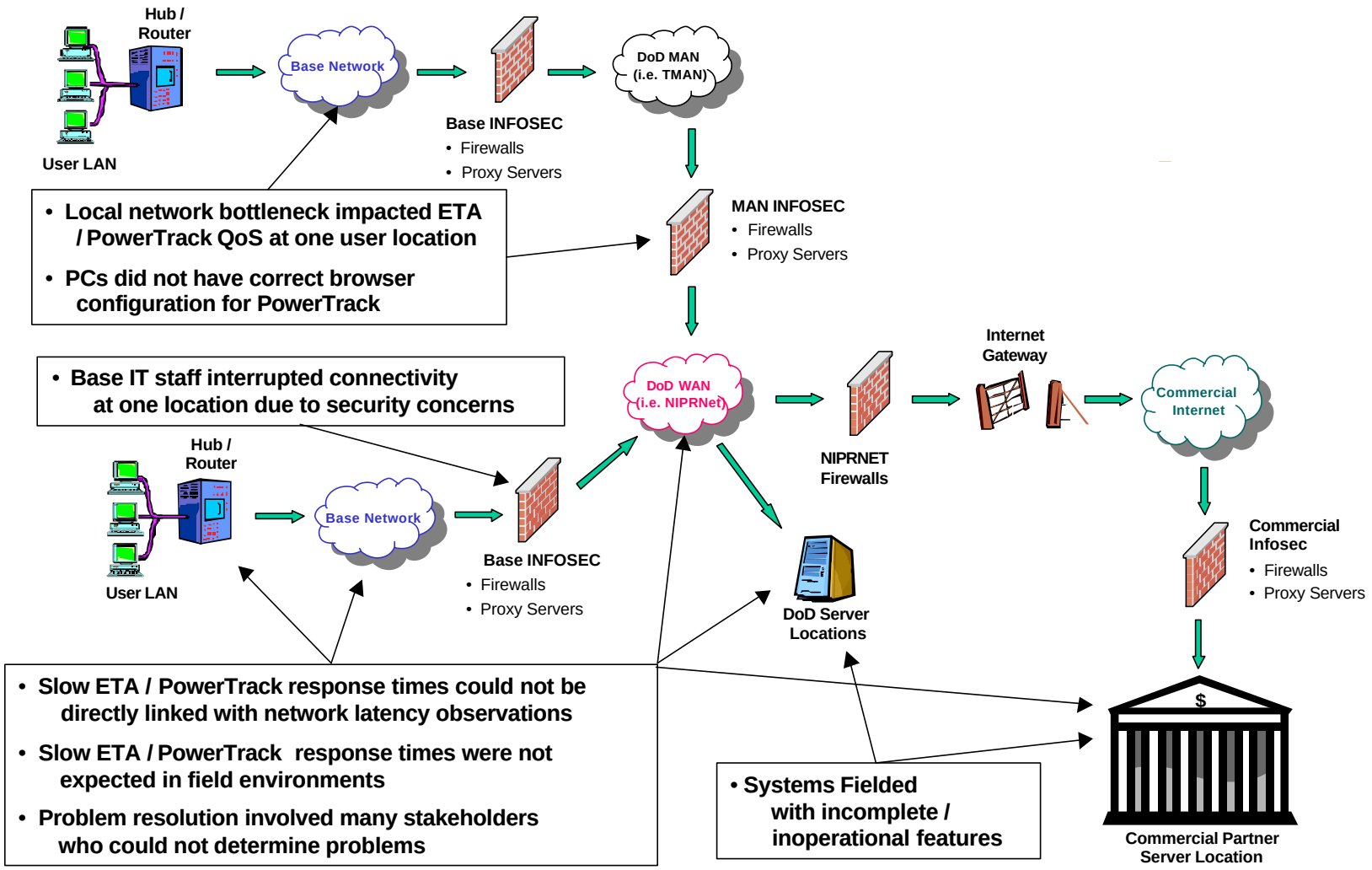
BUSINESS PROCESS IMPACTS AND PREDEPLOYMENT GUIDANCE HAVE IMPACTED ROLLOUTS OF ON-LINE PURCHASE CARD STATEMENT APPROVAL AND CERTIFICATION

PURCHASE CARD OBSERVATIONS



WHILE SLOW RESPONSE TIMES WERE OBSERVED AT MOST LOCATIONS, NO SINGLE ELEMENT OF IT INFRASTRUCTURE UNDER DOD CONTROL APPEARED TO CONSISTENTLY PREVENT APPLICATION ACCESS OR CAUSE SLOW RESPONSE

IT INFRASTRUCTURE OBSERVATIONS



THE RECOMMENDATIONS SECTION OF THE ELECTRONIC BUSINESS OPERATIONS QUALITY OF SERVICE AND BARRIERS STUDY BRIEFING IS ORGANIZED AS FOLLOWS

- Recommendations Summary: This page lists all recommendations categorized by the five key areas of Strategy, Process and Organization, Technology, Change Management and Security that framed the analysis.

The pages following the Recommendations Summary are organized by the five key areas mentioned above and presents greater detail for each recommendation

- Recommendations for each area are provided
- The major observations and feedback from the site surveys which contribute to these recommendations are summarized
- Discussion of these observations leading to the recommendations is provided

RECOMMENDATIONS TO SUPPORT THE DOD ENVIRONMENT FOR E-BUSINESS COTS IMPLEMENTATION HAVE BEEN DEVELOPED BASED ON FEEDBACK AND OBSERVATIONS

Strategy	1. Develop a strategy and common methodology for deployment of DoD e-Business COTS-like applications and e-Business services that addresses all aspects of system/service implementation, leveraging existing frameworks and methodologies as appropriate 2. Apply a cross-Service review process for e-Business initiatives which ensures all DoD components have input into assessment, selection and approval of Department-wide efforts
Process	3. Establish a change management process to identify and address cross-functional impacts of proposed e-Business initiatives on local business processes, and provide feedback to program management on problems and resolution 4. Identify and evaluate impact of legacy accounting conventions (e.g., LOA) , and other legacy data, on DoD e-Business initiatives
Technology	5. As part of e-Business methodology development, include standards and guidelines to ensure adequate system testing is incorporated into planning and implementation processes for all DoD e-Business initiatives, and to ensure adequate field-testing and trials are conducted prior to rollout 6. Ensure DoD (e.g., GIG) architectures include e-Business IT capabilities required by DoD 7. Implement an end-to-end performance monitoring capability to support e-Business systems 8. Establish formal feedback mechanism to capture and resolve Quality of Service issues with Commercial partners
Change Management	9. Develop incentives to encourage implementation of, and accountability for, e-Business by DoD Components 10. Create communications plans that leverage existing and evolving e-Business governance structures to provide guidance and direction to DoD end-users when fielding a modified or reengineered process 11. Develop a DoD-level training plan to ensure adequate training is incorporated into planning and implementation processes for all DoD e-Business initiatives. Ensure training is tailored to the e-Business application, capabilities of the target user community, business process, and local environment
Security	12. Establish standards and guidelines for DoD-wide information security compliance for e-Business initiatives 13. Document and reconcile security issues for each e-Business initiative at the department level to ensure visibility and awareness of compliance to local security organizations

RECOMMENDATION 1: DEVELOP A STRATEGY AND COMMON METHODOLOGY FOR DEPLOYMENT OF DOD E-BUSINESS COTS-LIKE APPLICATIONS AND E-BUSINESS SERVICES THAT ADDRESSES ALL ASPECTS OF SYSTEM/SERVICE IMPLEMENTATION, LEVERAGING EXISTING FRAMEWORKS AND METHODOLOGIES AS APPROPRIATE

RECOMMENDATION 2: APPLY A CROSS-SERVICE REVIEW PROCESS FOR E-BUSINESS INITIATIVES WHICH ENSURES ALL DOD COMPONENTS HAVE INPUT INTO ASSESSMENT, SELECTION AND APPROVAL OF DEPARTMENT-WIDE EFFORTS

Strategy Observations	Discussion
• Planning and implementation of COTS-like web service applications was based on existing software implementation methodologies	• Program managers for e-Business implementations need access to a common approach which addresses the unique characteristics and challenges of COB implementation for those initiatives
• Interactions between e-Business applications and local business processes, base IT architectures, information security, and other (related) systems were not fully understood at system rollout	• Because of the contributions required from DoD components, and the need to cooperate across traditional organizational boundaries, DoD components need to assess impact of e-Business initiatives prior to implementation
• Areas of responsibility for different components involved in e-Business deployment efforts are not consistently defined across organizational boundaries	• New e-Business systems and processes must support local operations to be fully embraced by DoD staff

RECOMMENDATION 3: ESTABLISH A CHANGE MANAGEMENT PROCESS TO IDENTIFY AND ADDRESS CROSS-FUNCTIONAL IMPACTS OF PROPOSED E-BUSINESS INITIATIVES ON LOCAL BUSINESS PROCESSES, AND PROVIDE FEEDBACK TO PROGRAM MANAGEMENT ON PROBLEMS AND RESOLUTION

RECOMMENDATION 4: IDENTIFY AND EVALUATE IMPACT OF LEGACY ACCOUNTING CONVENTIONS (E.G., LOA) , AND OTHER LEGACY DATA, ON DOD E-BUSINESS INITIATIVES

Process Observations	Discussion
• Working Capital Fund (WCF) and other processes generate unique Lines of Accounting (LOA) for each purchase, especially bulk purchases, requiring immediate entry of multiple LOAs into the Purchase Card payment system to prevent invoice rejection • Potential LOA conflicts concerning specific purchases must be identified and resolved by Cardholders without full background or experience in DoD financial practices • Slow response time and the immediate need for transportation offices to move shipments prevented the use of ETA for many shipments, and thus precluded the use of PowerTrack for freight payment at Army and Navy locations	• Payment process automation creates impacts to manual, labor-intensive finance and accounting processes that interface with the payment process • Other e-Business initiatives which affect payment processes (e.g. Defense Travel System) could have similar impacts • Local business process impacts caused by interrelationships and dependencies between e-Business and COB applications and DoD systems and processes must be understood

RECOMMENDATION 5: AS PART OF E-BUSINESS METHODOLOGY DEVELOPMENT, INCLUDE STANDARDS AND GUIDELINES TO ENSURE ADEQUATE SYSTEM TESTING IS INCORPORATED INTO PLANNING AND IMPLEMENTATION PROCESSES FOR ALL DOD E-BUSINESS INITIATIVES, AND TO ENSURE ADEQUATE FIELD-TESTING AND TRIALS ARE CONDUCTED PRIOR TO ROLLOUT

Technology Observations	Discussion
• Problems with credit card management reports and premature system timeouts were undetected until system deployment • EDI links between banks and DFAS were not resolved prior to pilot test, limiting validity of the pilot test • Slow ETA and PowerTrack start up and response times were not expected but frequently encountered in field environments	• Performance problems were not detected because of limited testing of the full system in live environments • Interrelationships between applications resulted in situations in which poor performance or usability problems for one application prevented use of the other (e.g., ETA and PowerTrack)

RECOMMENDATION 6: ENSURE DOD (E.G., GIG) ARCHITECTURES INCLUDE E-BUSINESS IT CAPABILITIES REQUIRED BY DOD

RECOMMENDATION 7: IMPLEMENT AN END-TO-END PERFORMANCE MONITORING CAPABILITY TO SUPPORT E-BUSINESS SYSTEMS

RECOMMENDATION 8: ESTABLISH FORMAL FEEDBACK MECHANISM TO CAPTURE AND RESOLVE QUALITY OF SERVICE ISSUES WITH COMMERCIAL PARTNERS

Technology Observations	Discussion
• End user desktop capabilities and network connectivity vary within base boundaries, and from base to base • Application performance at one location was clearly impacted by bottlenecks within the local base network • Performance information from multiple DoD and commercial sources cannot be easily obtained to routinely monitor system performance • Problem resolution requires coordinated action by base IT, DISA and DoD proponent and/or commercial partner technical staff	• Differences in base-level infrastructure could impact e-Business application availability and performance to target DoD user groups • Lack of an enterprise-wide monitoring capability limits ability to collect and correlate e-Business system performance data from DoD and commercial organizations • DoD and commercial partners need ongoing information exchange regarding application performance

RECOMMENDATION 9: DEVELOP INCENTIVES TO ENCOURAGE IMPLEMENTATION OF, AND ACCOUNTABILITY FOR, E-BUSINESS BY DOD COMPONENTS

RECOMMENDATION 10: CREATE COMMUNICATIONS PLANS THAT LEVERAGE EXISTING AND EVOLVING E-BUSINESS GOVERNANCE STRUCTURES TO PROVIDE GUIDANCE AND DIRECTION TO DOD END-USERS WHEN FIELDING A MODIFIED OR REENGINEERED PROCESS

Change Management Observations	Discussion
• Some local organizations did not receive guidance and direction from command organizations to deploy and use Purchase Card (PC) system	• Inconsistent communication of value and benefits to end users hindered implementation of e-Business initiatives at local organizations
• Several shipping offices had incorrect browser configurations for PowerTrack, despite rollout strategy and technical guidelines from US Bank and OSD/Service program management	• Critical technical and operational guidance on e-Business initiatives does not reach end users, also hindering implementation and acceptance

RECOMMENDATION 11: DEVELOP A DOD-LEVEL TRAINING PLAN TO ENSURE ADEQUATE TRAINING IS INCORPORATED INTO PLANNING AND IMPLEMENTATION PROCESSES FOR ALL DOD E-BUSINESS INITIATIVES. ENSURE TRAINING IS TAILORED TO THE E-BUSINESS APPLICATION, TARGET USER COMMUNITY, BUSINESS PROCESS, AND LOCAL ENVIRONMENT

Change Management Observations	Discussion
• Rollout delays between training and application deployment reduced training value	• Training approaches and techniques were not matched to the needs of the target user communities
• Effectiveness of "Train-the-Trainer" approach has been limited by technical skill levels of local managers and infrequent usage by some cardholders	• Multiple training techniques and methods are available to support potential users (on line support, CDROM, classroom training, distance learning)
• Army and Navy shippers received separate, independent ETA and PowerTrack training that did not fully illustrate the capabilities of both systems when used together on a shipment	• Training requirements for user communities are governed by multiple factors - User familiarity with and exposure to modernized business processes - Complexity of business processes - User IT skills - Application ease of use and complexity

RECOMMENDATION 12: ESTABLISH STANDARDS AND GUIDELINES FOR DOD-WIDE INFORMATION SECURITY COMPLIANCE FOR E-BUSINESS INITIATIVES

RECOMMENDATION 13: DOCUMENT AND RECONCILE SECURITY ISSUES FOR EACH E-BUSINESS INITIATIVE AT THE DEPARTMENT LEVEL TO ENSURE VISIBILITY AND AWARENESS OF COMPLIANCE TO LOCAL SECURITY ORGANIZATIONS

Security Observations	Discussion
• Some installations hesitated to implement PowerTrack because of security concerns	• Independent interpretation and implementation of DoD Information Assurance policies by IT organizations can lead to denied access to e-Business applications
• Due to autonomy of local organizations, IT management at multiple levels had independently implemented security directives from DoD and the Services at the WAN, MAN, and Base levels, resulting in multiple points of potential service denial	• DoD organizations need to be assured that COTS software provided and maintained by commercial partners meets all appropriate DoD and Service Information Assurance requirements
• Base-level decision making for local access control interrupted connectivity to PowerTrack at one location because of observed server-initiated connections	• DoD needs to ensure balance and consistency in the application of IA policies and regulations to e-Business COTS software

IMPLEMENTATION OF E-BUSINESS SOLUTIONS AND SERVICES THROUGHOUT THE DOD ENTERPRISE REQUIRES A NEW APPROACH TO BUSINESS TRANSFORMATION AND TECHNOLOGY DEPLOYMENT

- This quick look study has identified specific challenges faced by two e-Business initiatives in the implementation of COTs web-based applications supporting a commercial partner's service; these challenges include:
  - Business process impacts
  - Training
  - System performance monitoring
  - System testing
  - Security
- These challenges emerged although program managers for these initiatives employed existing implementation methodologies for software systems
- These e-Business initiatives represent a new software implementation model to DoD, whose characteristics can contribute to potential problems for program managers, such as:
  - Size of user population
  - Role of DoD components and commercial partners in delivering services
  - Software ownership rights
  - Security
- The Department needs a new strategy and implementation methodology for e-Business web-based applications, based on existing guidance with appropriate enhancements, to equip functional program managers across the Department for future initiatives
- The goal of this new approach will be to ensure quality of service to the end user by defining how both Departmental and commercial partners provide the necessary support during implementation and throughout the life cycle of e-Business programs

ACTION STEPS AND RESPONSIBILITIES TO IMPLEMENT THESE RECOMMENDATIONS ARE DEFINED

Strategy	1. Create assessment template for e-Business evaluation which addresses: full life-cycle costs, savings, performance benefits, operational impacts (EB BOD, JECPO, USD Comptroller) 2. Create an Implementation Plan template for e-Business initiatives which addresses: software development, testing, field trials, training, rollout, marketing/communication plan (EB BOD, JECPO) 3. Create an IT Architecture/Information Security Impact Assessment template for e-Business initiatives which addresses all key characteristics of the user IT environment (e.g., network impacts, desktop requirements, security, etc…) 4. Designate CIO Executive Board as DoD e-Business review agent (CIO EB)
Process	5. Include criteria in implementation template for identification and evaluation of cross-functional impacts (EB BOD, MilDeps) 6. Develop criteria and metrics for field testing to ensure feedback on local business process impacts encountered in field testing is collected and evaluated (EB BOD, MilDeps) 7. Evaluate potential standards for LOA's for use in DoD e-Business (USD Comptroller, JECPO) 8. Develop a pilot program to test LOA standards for e-Business systems (USD Comptroller, JECPO, functional staff) 9. Identify potential e-Business data integrity problems with other legacy data elements (JECPO, DCIO)
Technology	10. Develop metrics and guidelines for all aspects of system testing to be included in Implementation Plan and IT Architecture/Information Security Impact Assessment templates: (JECPO, JITC, EB BOD) 11. Develop metrics and guidelines for all aspects of field testing and trials to be included in Implementation Plan and IT Architecture/ Information Security Impact Assessment templates: (JECPO, ITC, EB BOD) 12. Address the need for end-to-end performance monitoring capability in the GIG architecture (DCIO) 13. Identify and evaluate alternatives for end-to-end performance measurement for the current DoD enterprise network environment (DISA); 14. Establish requirements for network and application performance data from e-Business partners, e.g. US Bank (DISA) 15. Develop metrics and guidelines to ensure user feedback is collected for all DoD e-Business initiatives (EB BOD) 16. Identify IT capabilities needed for DoD e-Business: Network, Processing/software, Security (JECPO, EB BOD) 17. Incorporate e-Business IT capabilities into appropriate (e.g., GIG) architecture (DCIO, EB BOD)
Change Management	18. Develop and promote incentive programs for DoD Components (USD Comptroller, EB BOD) 19. Assess performance of specific e-Business initiatives across the DoD semiannually with a common set of metrics (EB BOD, DoD CIO) 20. Define specific communications roles and responsibilities for the EB BOD and Component EB offices for information dissemination (EB BOD) 21. Define metrics and guidelines for program promotion for Implementation Plan template (EB BOD) 22. Create metrics and guidelines for training in the e-Business assessment template to ensure investments, user effectiveness, business process alignment, and cross-functional impacts are included in training plans (DoD CIO, JECPO, EB BOD) 23. Create metrics and guidelines for training in the e-Business Implementation Plan template to ensure content and delivery media availability, cross-functional process interactions, and coordination with system rollout (DoD CIO, JECPO, EB BOD)
Security	24. Compile, validate, and maintain e-Business INFOSEC requirements based on existing certification processes, Information Security directives, and other sources (DoD CIO) 25. Create metrics and guidelines to ensure security compliance of e-Business initiatives throughout program life cycles (DISA, JTF-CND, JECPO)

MOVING FORWARD, TO ENSURE SUCCESS WITH E-BUSINESS INITIATIVES DOD SHOULD DEFINE MEASURABLE RESPONSIBILITIES FOR DOD COMPONENTS AND COMMERCIAL PARTNERS FOR E-BUSINESS IMPLEMENTATION AND OPERATION

Commercial Partner Responsibilities	DoD Component Responsibilities	Joint DoD/Commercial Partner Responsibilities
• Application availability • Application response time • Operation of functionality • System performance under load conditions • Information security compliance • Data integrity • Configuration management • Usability/ User interface • Training material development and delivery • Customer/ end user support	• Business process impact assessment and resolution • Monitoring commercial provider performance against service level targets • DoD IT infrastructure impact assessment • DoD information security impact assessment • Monitoring DoD infrastructure performance • Gaining buy-in from and providing direction to subordinate organizations on implementation efforts • Collect user feedback on utility and benefits of the e-Business initiative • Establish quality if service metrics for auditors	• Joint interoperability testing (e.g., EDI links) • Integration testing • Field testing • Site cutovers • Program communications • Implementation tracking • Review feedback on utility and benefits of the e-Business initiative

"AS IS" TRANSPORTATION PAYMENT PROCESS OVERVIEW
1. The shipper (customer) requiring movement of an item provides data needed to complete the shipment (e.g., destination, timeframes, item handling instructions), and one or more Line of Accounting (LOA) codes for payment purposes to the base transportation office.
2. Shipping clerks at the base transportation office enter shipment data into a logistics system supporting that service; the system assists in carrier selection and rate estimation, and generates a Government Bill of Lading.
3. The carrier picks up the item to be shipped, often while the Bill of Lading is being prepared by the transportation office. The carrier also receives paper copies of the Bill of Lading for tracking and invoicing purposes.
4. The carrier delivers the item to the end destination.
5. The carrier invoices DFAS for payment.
6. DFAS pays carrier via EFT.

"TO BE" TRANSPORTATION PAYMENT PROCESS OVERVIEW
1. The shipper (customer) requiring movement of an item provides data needed to complete the shipment (e.g., destination, timeframes, item handling instructions), and one or more Line of Accounting (LOA) codes for payment purposes to the base transportation office.
2. Shipping clerks at the base transportation office enter shipment data into a logistics system supporting that service; the system assists in carrier selection and rate estimation, generates a Commercial Bill of Lading (CBL), and forwards shipment CBL data to US Bank.
3. The carrier picks up the item to be shipped, often while the Commercial Bill of Lading is being prepared by the transportation office.
4. The carrier delivers the item to the end destination.
5. The carrier electronically provides a delivery notice to US Bank which is correlated to the bank's record for that shipment (generated in Step 2). Transportation office staff access shipment records through PowerTrack and approves shipments for payment by US Bank.
6. Transportation office accesses PowerTrack monthly for invoices. The certified invoice is sent to DFAS for payment.
7. DFAS pays US Bank for freight payments made to carriers, via EFT, once the certified invoice is received from the shipper.

SITE SURVEY RESULTS - TRANSPORTATION

SITE SURVEY RESULTS	IMPLICATIONS
ETA response times are about 2-4 minutes per transaction (direct observation). ETA performance was reported to be very slow during most of the working day, during which most shipments were made (staff feedback).	Since carriers were often waiting for a Bill of Lading prior to departure in real time, transportation office staff could not use ETA to generate CBLs for shipments because of slow ETA system response times.
Transportation offices used existing legacy system (CFM/FM) to process shipments, resulting in GBL creation (staff feedback).	Since PowerTrack requires a CBL to be generated to have access to shipment information, PowerTrack is never involved in those shipments for which response time prevents ETA use.
Users encountered unexpected results with ETA when entering the GBLOC data field, resulting in GBL creation instead of CBL creation in about 5-10% of ETA transactions (staff feedback). Users at both Army and Navy locations encountered this condition (staff feedback).	Certain payments that could have been processed by PowerTrack and paid by US Bank, had to be handled through the "As Is" process.
PowerTrack startup times are about of 5-7 minutes from initial login to application availability (direct observation). PowerTrack response times are about of 1-3 minutes per transaction (direct observation).	PowerTrack start up and response times are currently an inconvenience, but do not prevent staff from using PowerTrack from processing a shipment payment, if US Bank has received the CBL from DoD.
Initially, PowerTrack and ETA training was provided separately and did not explain the relationships between the two systems; systems training, however, was later combined (staff feedback).	The learning process and ramp-up times for both systems were longer than expected (staff feedback).
DoD's PowerTrack implementation currently requires a 2 megabyte file of profile data to be downloaded from the US Bank server at application startup; typical profile data file sizes in commercial implementations are 20-30 kilobytes (PowerTrack).	Configuration of COTS software to support DoD business processes may lead to unintended performance impacts.

"AS IS" PURCHASE CARD PAYMENT PROCESS OVERVIEW
1. The Cardholder makes a purchase using the Purchase Card. If the Cardholder is making a purchase on behalf of a customer, the customer provides a Line of Accounting (LOA) code along with the purchase request; in most instances the customer and Cardholder are the same individual. The Cardholder keeps a log of all purchases made using his Purchase Card(s).
2. The issuing bank mails a monthly paper statement to the Cardholder. The Cardholder verifies individual transactions on the statement against his log, indicates which LOA is to be used for each item and forwards the statement in paper form to the Authorizing Official for his card.
3. The Certifying Official reviews verified statements from all Cardholders under his supervision, and certifies statements as appropriate. Authorized statements are forwarded to a Resource Manager at the base in paper form.
4. The Resource Manager reviews authorized statements for appropriate LOAs as part of the positive funds control system. Statements are forwarded to paying office, typically DFAS, in paper form for final payment.
5. DFAS issues a payment to the issuing bank via EFT

"TO BE" PURCHASE CARD PAYMENT PROCESS OVERVIEW
1. The Cardholder makes a purchase using the Purchase Card. If the Cardholder is making a purchase on behalf of a customer, the customer provides a Line of Accounting (LOA) code along with the purchase request; in most instances the customer and Cardholder are the same individual. The Cardholder keeps a log of all purchases made using his Purchase Card(s).
2. During the course of the month, the Cardholder can access the statement for his Purchase Card account on-line via the issuing bank's web-based payment system. The Cardholder verifies individual transactions on the statement against his log, indicates which LOA is to be used for each item, and when finished marks the statement as verified and ready for on-line review by the Certifying Official.
3. The Certifying Official reviews verified statements and certifies statements via the issuing bank's web-based payment system.
4. The issuing bank transmits an obligation via EDI 821 transaction to DFAS, followed by an invoice via EDI 810 transaction two days later, for each certified card account. DFAS issues a payment to the issuing bank via EFT.

SITE SURVEY RESULTS – PURCHASE CARD

SITE SURVEY RESULTS	IMPLICATIONS
Many Cardholders are not trained to resolve LOA conflicts encountered in those cases for which purchases are made on behalf of a customer (staff feedback).	Cardholders could be at risk if purchases are made against accounts with insufficient funding.
LOAs need to be entered manually for each purchase which is made on behalf of a customer (staff feedback); several cases of manual handoff of LOAs can occur in these situations (staff feedback). LOAs are 80-200 character data elements with multiple formats in use throughout the DoD (direct observation).	Manual handoff and data entry of LOAs present data integrity problems to local organizations, particularly where Cardholders obtain LOAs from customers for individual purchases.
Several bases were making no plans for Purchase Card payment system deployment, and had received no instructions from their command organizations in this regard (direct observation, staff feedback).	Command organizations had not fully accepted the value or benefits to be achieved by the implementation of the Purchase Card payment systems.
EDI links between DFAS and an issuing bank were not operational during a pilot test; as a result, a much smaller number of cardholders were able to participate in the pilot test (staff feedback).	Applicability of field test results to DoD environment was limited because the scale of the test was not large enough to illustrate potential problems of a full base-wide roll out.
Issuing banks insist that passwords for all system users be changed monthly (staff feedback).	Local managers are concerned that many users will have difficulty gaining access to the system after full implementation.
Many users are experiencing premature timeouts on both Purchase Card systems (direct observation); management reports from these systems gave incomplete or erroneous results (staff feedback).	Systems have been fielded with insufficient testing. Premature timeouts and reporting problems after large-scale deployment could reduce usability of these systems.
The "Train the Trainer" approach is not well matched to some local business environments (staff feedback). Training provided several months before implementation has limited value (staff feedback).	Cardholder churn (20% or more in military environments), sophistication of payment system features, and wide range of user skill levels increase the amount of training required per cardholder staff from the current "As Is" case.

SITE SURVEY RESULTS – IT INFRASTRUCTURE

SITE SURVEY RESULTS	IMPLICATIONS
Very slow PowerTrack startup times (15 minutes) and ETA/PowerTrack response times (several minutes) were observed at a Navy location; network latency to bank locations was also relatively long (~800 milliseconds – direct observation).	A local network bottleneck at this location (BRI ISDN channel linking two 100Mbps Fast Ethernet LAN segments) degraded ETA and PowerTrack startup and response times. Ability to use ETA and PowerTrack to process and pay for outgoing shipments from the base was impacted.
Slow ETA and PowerTrack response times were encountered in the field although network latency to server sites from most surveyed locations appeared to be acceptable (100-200 milliseconds – direct observation). IT staff at the bases, wide area network, and commercial/ bank IT organizations could not determine problems (staff feedback).	Resolution of performance problems needs to consider the server and client operating software configuration and performance in addition to network performance. Coordination of system performance data across organizational boundaries occurs on an exception basis . Responsibilities for DoD and commercial organizations supporting COTS applications do not appear to be fully defined.
Slow ETA and PowerTrack response times encountered in the field were not expected by local staff (staff feedback). Cardholder payment systems were fielded with premature timeouts and problematic reporting functions (direct observation, staff feedback).	System testing and field testing in live environments did not identify problems that later appeared after deployment.
Two user PCs were found not to have the correct browser configurations for the PowerTrack application (direct observation); local IT staff were not aware of these configurations (direct observation).	Technical guidance and direction on required PC configurations to support web-based COTS software is not reaching end user organizations.
A military command organization was weighing direction to a network management group prohibiting PowerTrack use at multiple locations (staff feedback). PowerTrack was blocked at one base by local IT staff for security reasons (staff feedback, direct observation).	Decisions regarding COTS compliance with DoD security policies are decentralized, and create multiple points of potential service denial.

I. INTRODUCTION

THE PURPOSE OF THIS "QUICK LOOK" STUDY IS TO IDENTIFY IMPEDIMENTS AND BARRIERS TO E-BUSINESS QUALITY OF SERVICE AND PROVIDE RECOMMENDATIONS TO SUPPORT THE DOD ENVIRONMENT FOR E-BUSINESS COTS IMPLEMENTATION

- The Department of Defense is deploying multiple e-Business initiatives involving web-based COTS applications in many areas to reduce costs and improve efficiency, and in the future, the Department intends to move towards larger use of combined DoD and commercial solutions
- The Office of the CIO/ASDC3I received feedback that Quality of Service (QoS) problems have hampered the rollout of two e-Business initiatives supporting two functional areas
  - USD A&T Government Purchase Card Program
  - Assistant Deputy Under Secretary of Defense (ADUSD) Transportation Policy Program
- DoD CIO commissioned a rapid, 60-day study to better understand potential performance problems and identify potential impediments to DoD e-Business implementation
- The reports of QoS problems from the DoD staff addressed a wide range of potential causes to achieving EBO objectives , and include technical and business issues such as:
  - Slow application response times
  - Inability of users to access the web application sites
  - Local barriers to acceptance
  - Potential local security concerns
- This breath of QoS issues led to a working definition of for Electronic Business Operations (EBO) QoS as "all aspects of a DoD user's interaction with an e-Business system which contribute to the system's effectiveness for that user, form the user's point of view"

THE STUDY FOCUSES ON DEPLOYMENT OF WEB-BASED COTS APPLICATIONS INTEGRATED INTO AN E-BUSINESS PARTNER'S SERVICE OFFERING TO THE DOD

- The Transportation and Purchase Card web-based COTS applications are integral parts of US Bank and Citibank financial service offerings to the DoD; DoD neither pays for the software nor has rights to the software beyond access for the specific services provided by the banks

- Because web technology and Internet access greatly reduce traditional technical barriers to entry, many more e-Business initiatives can address a wide range of process automation and modernization opportunities across the Department

- Like conventional COTS software implementation efforts, these e-Business initiatives face traditional challenges to implementation
  - Managing impacts on user business processes
  - Gaining user buy-in
  - Testing system functionality
  - Training users
  - More stakeholders both within and beyond DoD

- The Transportation and Purchase Card e-Business initiatives present new software implementation models to DoD, and present new challenges
  - Applications reaching tens or hundreds of thousands of DoD users at all levels
  - Major role of commercial partners in providing service to DoD users
  - Multidimensional security risks
  - Coordination of OSD functionals and technology organizations

THE EBO QoS STUDY WAS DIVIDED INTO TWO PHASES, EACH LASTING APPROXIMATELY 30 DAYS IN DURATION

- Phase I (April/May 2000) was an evaluation of EBO at selected DoD locations that are known to have current quality of service problems
  - The goal is to frame these problems in terms of impediments to full service
  - This evaluation addressed the full range of functionality and response from the end-user (customer) perspective

- Phase II (May/June 2000) was a natural follow on to Phase I and analyzed these impediments and provided a set of recommendations for achieving the Department's electronic business goals
  - The impediments identified in Phase I have been validated with DoD stakeholders and categorized with the five key areas that framed the analysis (Strategy, Process, Technology, Change Management, and Security).
  - Other US Federal Government and commercial practices were identified and assessed for application to DoD
  - For each impediment and barrier, candidate recommendations were developed. This set of recommendations will assist the Department in the deployment of future e-Business applications
  - Also, a suggested framework of DoD component, commercial partner and joint DoD/commercial partner responsibilities has been provided as an initial framework for performance measurement

- This report is organizes into eight chapters with an executive summary
  - Chapter I Introduction
  - Chapter II Methodology
  - Chapter III Government Purchase Card Observations
  - Chapter IV Transportation Program Observations
  - Chapter V Base Area Network IT Infrastructure Observations
  - Chapter VI Potential Major Impediments
  - Chapter VII Federal and Commercial Points of View
  - Chapter VIII Recommendations and Actions Steps

THE ASSESSMENT TEAM FOLLOWED A SIX-STEP WORKPLAN FOR THIS "QUICK LOOK" STUDY

STEP	KEY ACTIVITIES
1. Assess Current Environment	• Interviews with DoD program management and Commercial Service Providers (US Bank, Citibank) • Review WAN environment
2. Site Data Collection	• Identify DoD sites and POCs for data collection • Conduct site visits and follow-up communications
3. DoD Stakeholder Discussions	• Identify and meet with stakeholders within OSD, Services, DISA, other organizations • Assess results against findings from site visits
4. Impediment Analysis and Report	• Identify technical and operational impediments affecting rollout and performance • Develop and review draft impediment set for 30-day report
5. Federal and Commercial View	• Gather information from other US Government and commercial firms regarding EBO QoS
6. Report Preparation	• Coordinate draft reports and executive summary briefings with appropriate DoD staff

THIS "QUICK LOOK" STUDY HAS IDENTIFIED POTENTIAL IMPEDIMENTS TO DOD E-BUSINESS QUALITY OF SERVICE, ALONG WITH A SET OF RECOMMENDATIONS AND ACTION STEPS

- Nine potential impediments were identified during field discussions with purchase card and transportation staff
- Thirteen recommendations to support the DoD environment for e-Business COTS implementation have been developed based on feedback and observations
- Twenty-five actions steps, all associated with a specific recommendation, were developed, along with the appropriate responsible organization
- The study also produced a recommended framework for performance assessment of commercial partner, DoD component, and joint DoD/commercial partner responsibilities for e-Business implementation and operation

II. METHODOLOGY

THIS SECTION PRESENTS THE METHODOLOGY USED FOR THE STUDY

- The study methodology emphasized on-site observations of e-Business implementations and staff interviews at seven DoD installations
- Aspects of our approach were driven by the time requirements and scope of the task
- The multiple dimensions of Quality of Service generated a wide range of issues in five keys areas that framed the analysis within our methodology
- Seven DOD sites were selected for on-site data collection
- Functional staff interviews primarily focused on business process issues and assessment of local application performance at that location within each base
- Interviews with base IT staff focused on existing base infrastructure supporting functional users
- Findings from the functional and base IT discussions are presented
- Potential impediments to e-Business in the DoD are defined by assessing functional and IT findings across organizational and functional lines
- Management at several (non-DoD) Federal Agencies and commercial organizations were interviewed to determine potential lessons learned relative to DoD e-Business impediments
- Recommendations were developed in the five key areas of strategy, process, technology, change management, and security

THE STUDY METHODOLOGY EMPHASIZED ON-SITE OBSERVATIONS OF E-BUSINESS IMPLEMENTATIONS AND STAFF INTERVIEWS AT SEVEN DOD INSTALLATIONS

- The seven DoD installations visited represent a cross section of Services, Commands and critical DOD functions, however, may not represent the full range of EBO service quality problems
  - Army: Fort Eustis and Fort Polk
  - Navy: NAS Patuxent River, NAS Oceana, Norfolk Naval Base
  - Air Force: Dover AFB, Langley AFB
- The study focused on local e-Business application rollouts in two program areas
  - Government Purchase Card: CitiDirect from Citibank(Navy), CARE from USBank (Army, Air Force)
  - Transportation: PowerTrack from USBank (in use at 6 of the 7 locations)
- Discussions were held with OSD program management offices, DoD CIO e-Business officials, DISA, Military Service staffs, US Bank program staff, and base functional and IT staff
  - Purchase Card: Agency Program Coordinators (APCs), Authorizing Officials (AOs)
  - Transportation: Transportation Officers and specialists
  - IT: Local Base IT and network management (e.g., DOIMs, SC staff)
- e-Business application operations were observed and timed while in use by functional staff during site interviews using non-invasive and mutually agreed upon techniques
- Measurements of network latency to application hosts (CARE, CitiDirect, and PowerTrack), and general Internet throughput were made using the Windows traceroute utility and test file transfers, where permitted by local security policy

NOTE: Scope and duration of study did not permit extensive or invasive end-to-end performance measurement

ASPECTS OF OUR APPROACH WERE DRIVEN BY THE TIME REQUIREMENTS AND SCOPE OF THE TASK

- The OSD decisions to deploy the Transportation and Purchase Card systems were not revisited, and were assumed to meet relevant business needs within DoD

- The bases surveyed were selected to present a cross section of the DoD environment and provide insight into reported problems; site visits focused on application usage, experiences and IT environment at the end user location

- On-site data collection consisted of the following:
  - Feedback gained from interviews with DoD staff
  - Direct observations of application operation, availability and response times, network latency, and data transfer rates to commercial Internet sites

- Intrusive testing and network monitoring on base networks were not performed to avoid disruption of local transportation or purchase card business operations, and to minimize impact on base IT staff

- Based on the focus on two functional areas and seven site visits, the e-Business impediments and recommendations developed from this study likely represent a subset of potential issues facing DoD

THE MULTIPLE DIMENSIONS OF QUALITY OF SERVICE GENERATED A WIDE RANGE OF ISSUES IN FIVE KEY AREAS THAT FRAMED THE ANALYSIS

Strategy	• Did technical and operational guidance on e-Business implementation reach the end users? • Were the benefits of e-Business initiatives communicated to end-users?
Process	• Did the application support the business (payment) process at that location? What other business processes will be effected by this application? • What would need to change, or be done differently, at the local level to support the new process? • How did users view the ease of use of the applications, particularly with respect to commercial Internet sites? • Did the functionality of the web-based application support local business operations?
Technology	• What was the application response time and availability? What is the impact on application use and local business operations? • What are the hardware and software capabilities of the desktop platforms in use by the purchase card and transportation users at the bases? • What is the base area network and in-building LAN architecture model at that base? • What connectivity is provided to and within buildings housing the purchase card and transportation users?
Change Management	• How were local users prepared for implementation fo the new systems? • How has training been provided, and what types of methods were used? • How effective is the customer support provided to the user?
Security	• What security issues were raised through implementation of these applications? • What information security measures are in place at the base? How are they managed? • Who drives or influences security policies impacting the base?

SEVEN DoD SITES WERE SELECTED FOR ON-SITE DATA COLLECTION

- The objective was to obtain a cross sample snapshot of DoD facilities to assess the how local organizations were support new E-business applications, from functional business and IT support perspectives; this was not intended to be a comprehensive, statistically significant sample
- Sites were chosen to meet several criteria

PT-1. Feedback from Purchase Card and Transportation program management on potential problem areas
PT-2. Sampling across Service boundaries
PT-3. Consideration of geography as a potential (network) variable

- The sites and POCs for the functional and Base IT areas are shown on the facing page
- The site count by Service was 3 Navy locations, 2 Army Locations, and 2 Air Force locations
- Selection of four sites in the Norfolk VA metropolitan area allowed rapid coverage of the sites to accommodate the short timeframes for this "quick look" study, and to eliminate potential variations in NIPRNet capacity as a factor contributing to performance differences
- Purchase card and transportation program management provided POCs for the functional communities at each base; local base IT staff were in turn identified by these local POCs

SITE SURVEYS WERE SCHEDULED TO TAKE PLACE IN LATE APRIL AND EARLY MAY

LOCATION/DATE	Base-level IT POC	Transportation POC	Government Purchase Card POC
NAS Pax River (April 27)	Dave Jones 301-342-4994	Joan Scully 301-342-1880 ext 17	APC Marion Murdock 301-757-6564
NAS Oceana (May 3)	Jack Calhoun 757-433-2507	John Lohndorf 757-433-2393	APC David Capps 757-433-2334
Norfolk Navy Base (May 4)	Andrea Starks 757-444-3605	Pam Wade 757-444-4401x1x340	APC Jane Huggins 757-444-2986 ext307
Langley AFB (May 5)	Capt. Glanzer 757-764-2642	Michael Larkins 757-764-7108	APC Captain Tim Klopfer 757-764-5097
Ft Eustis (May 9)	James Gerald 757-878-5586	Joan Haynie 757-878-2823	APC Laura Waters/ Shaunda McManus 757-878-5809 ext249/5123
Dover AFB (May 10)	Charles Jackson 302-677-5183	Joe Hogan 302-677-4389	APC Christine Murphy 302-677-4911
Ft Polk (May 16)	Paul Jackson, DOIM 337/318-531-1644	Rich Bombassi 337-531-1415	APC Ron Applewhite 318-531-2373

FUNCTIONAL STAFF INTERVIEWS PRIMARILY FOCUSED ON BUSINESS PROCESS ISSUES AND ASSESSMENT OF LOCAL APPLICATION PERFORMANCE AT THAT LOCATION WITHIN EACH BASE

- The purchase card functional area provided a view of E-business applications being rolled out to the general DoD population (approximately 250,000 cardholders)

PT-4. CARE from US Bank to Army and Air Force users
PT-5. CitiDirect from CitiBank to Department of Navy users

- The transportation functional area consists of users already using automated systems to perform highly specialized tasks (shipment management) on a day to day basis, who would be more familiar with the concepts and purpose of the E-business application (PowerTrack from US Bank)

- Interviews and discussions with functional staff frequently took between 1-2 hours, and followed similar formats

PT-6. Discussion of issues in the five key areas framed the analysis presented earlier in this section (60-90 minutes)
PT-7. Demonstration of application operation (e.g., creation of a Commercial Bill of Lading using ETA, verification/authorization of a shipment payment via PowerTrack, maintenance on a cardholder account using CitiDirect or CARE) (20-30 minutes)
PT-8. Traceroutes to application servers (10 minutes)

- Often at least two staff from the functional organizations were in attendance; local IT staff and contractors supporting these functional staff would also attend these meetings, where possible

INTERVIEWS WITH BASE IT STAFF FOCUSED ON EXISTING BASE INFRASTRUCTURE SUPPORTING FUNCTIONAL USERS

- Interviews and discussions with Base IT staff frequently took between 1-2 hours, and followed similar formats

PT-9. Discussion of the issues in the five key areas framed the analysis presented earlier in this section (60-90 minutes)
PT-10. Discussion of observed results from previous interviews (e.g., traceroutes)

- These discussions were usually set up with Base IT technical staff and/or management through contacts provided by functional POCs

- These interviews were usually conducted at the end of the base visit, in order to include discussions on observations made in the functional discussions

- In two cases (Norfolk Navy Base and Langley) the Base IT discussions were held by phone several days after the on-site visits with functional staff

FINDINGS FROM THE FUNCTIONAL AND BASE IT DISCUSSIONS ARE PRESENTED

- The results of discussions with functional staff in both the purchase card and transportation areas are provided in a separate section for each area (Chapters III and IV), which covers the following subjects

PT-11. Overview of business processes
PT-12. Impact of application on local processes
PT-13. Application deployment/rollout status
PT-14. Training
PT-15. Functionality and ease of use
PT-16. Application issues

- Results of Base IT discussions are summarized in Chapter V; the summary addresses:

PT-17. Desktop environment
PT-18. Base area networks and LAN architectures
PT-19. Discussion of sample base networks
PT-20. Assessment of local IT support provided to functional users
PT-21. Coverage of base user communities
PT-22. WAN connectivity and network latency
PT-23. Local base network information security management

POTENTIAL IMPEDIMENTS TO E-BUSINESS IN THE DOD ARE DEFINED BY ASSESSING FUNCTIONAL AND IT FINDINGS ACROSS ORGANIZATIONAL AND FUNCTIONAL LINES

- Potential impediments are based on subject areas raised in both functional and Base IT interviews
- Where possible, common themes across locations and functional were identified in assessing and characterizing impediments
- However, due to the small sample size of the sites and the differences between the two functional communities commonality was not always observed in each impediment area
- Discussions with program management and DISA were also used to assess potential impediments
- Potential impediments to E-Business in the DOD are presented in Chapter VI

MANAGEMENT AT SEVERAL (NON-DOD) FEDERAL AGENCIES AND COMMERCIAL ORGANIZATIONS WERE INTERVIEWED TO DETERMINE POTENTIAL LESSONS LEARNED RELATIVE TO DOD E-BUSINESS IMPEDIMENTS

- The primary purpose of these discussions was to assess how other organizations are addressing the types of potential impediments to e-Business implementation that were identified during the seven site visits

- The impediments described in Chapter VI served as the basis for these discussions

- These interviews focused on lessons learned by these organizations, and potential application in the DoD environment

- Interviews were conducted in person with technical and business management staff, and usually lasted 1-2 hours

THE RECOMMENDATIONS DEVELOPED ARE ORGANIZED BY THE FIVE KEY AREAS OF STRATEGY, PROCESS, TECHNOLOGY, CHANGE MANAGEMENT AND SECURITY

- The major observations and feedback from the site surveys which contribute to these recommendations are summarized

- Discussion of these observations leading to the recommendations is provided

- Action steps, along with responsible parties, are also identified for each recommendation

III. PURCHASE CARD OBSERVATIONS

THE DOD IS ATTEMPTING TO MODERNIZE PURCHASE CARD PAYMENTS BY PROVIDING CARDHOLDERS WITH ELECTRONIC ACCESS AND CONTROL OVER THEIR MONTHLY STATEMENTS

- DoD is seeking to gain multiple benefits across the Department through implementation of web-based COTS applications to streamline purchase card payment
  - Reduction of processing costs for card account bills
  - Elimination of late payment charges
  - Enable use of cards for more transactions
  - Rebates to the Department from early payment and additional purchase volume
- Two commercial purchase card systems are being deployed:
  - Most DoD components will use the CARE application from US Bank
  - The Department of the Navy will use the CitiDirect application from CitiBank
- Upon rollout, Cardholders will gain online access to account statements via COTS web-based applications provided by Citibank and US Bank
  - Cardholders will have the ability to electronically view and reconcile monthly purchase card billing statements
  - Ability to review and approve bills online will facilitate the ability of Cardholders to manage their accounts
- Local purchase card managers will have the ability to create and maintain cardholder accounts, define cardholder and authorizing official reporting relationships, and review card activity at the base/program level.

DoD IS IN THE EARLY STAGES OF CARDHOLDER ACCOUNT SYSTEM DEPLOYMENT

- Area Program Coordinators (APCs) are using both systems for account management
  - Many Navy locations use CitiDirect management capabilities to maintain card holder accounts, but have not deployed full access to cardholders
  - CARE and FirstLink/FirstView (US Bank's predecessor card management system) are used today in other DoD environments

- The Navy and Army are conducting initial rollouts and field trials
  - Tidewater area naval installations are pilot sites for full CitiDirect usage for payment by cardholders
  - Fort Polk is a DoD pilot site for CARE

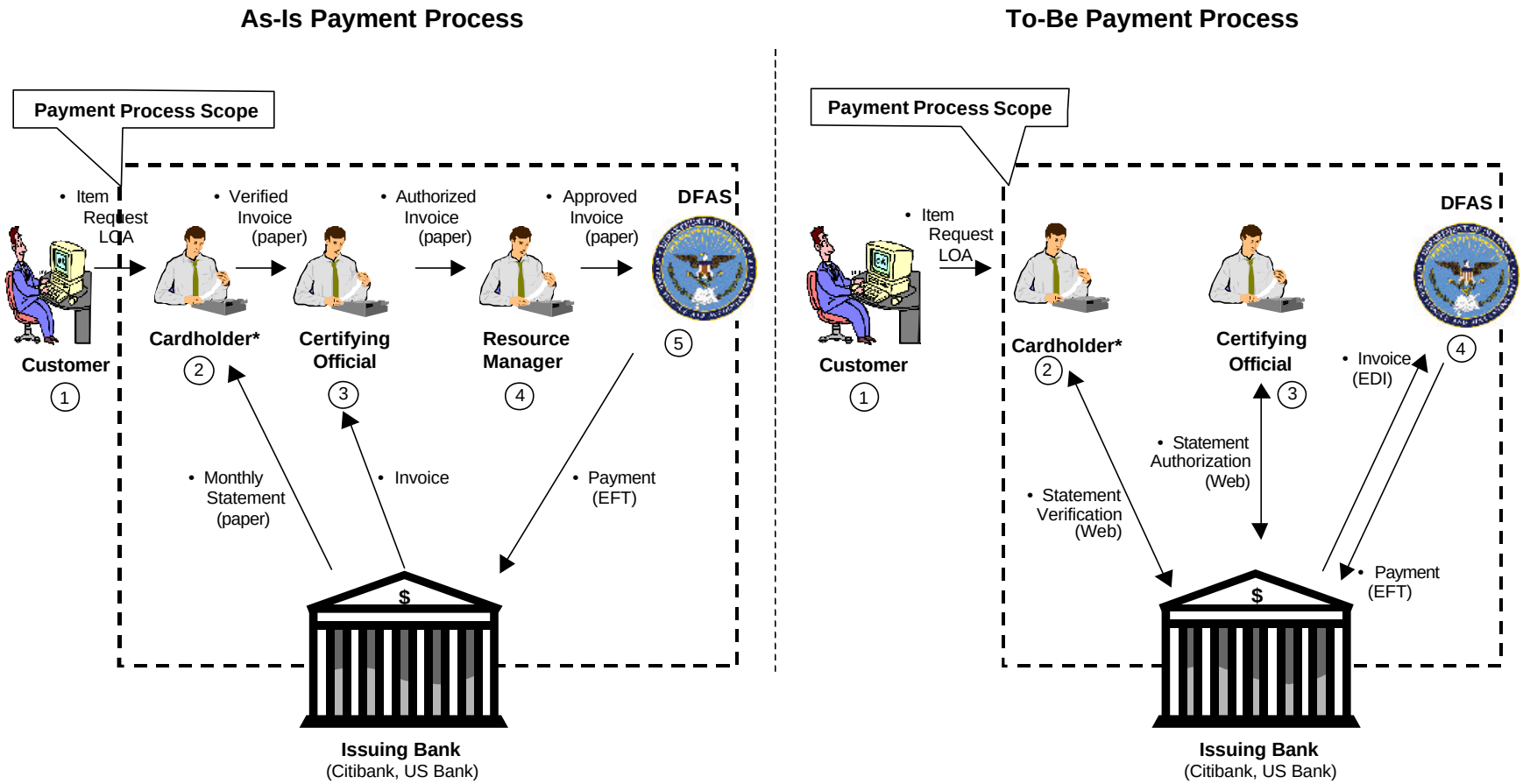
- Deployment of full card holder functionality is being extended to a small number of DoD purchase card accounts (out of over 200,000 DoD purchase card accounts) in field trials

BOTH CITIDIRECT AND CARE PURCHASE CARD PAYMENT SYSTEMS WILL STREAMLINE PAYMENT OF MONTHLY STATEMENTS BY ALLOWING CITIBANK AND US BANK TO PROACTIVELY MANAGE HANDOFFS IN THE PAYMENT PROCESS

- Cardholders make purchases using cards based on requestor requirements, and enter data for each transaction against a monthly log of card transactions (date, item, amount, merchant, funding source)
- Cardholders access account statements on line after the end of each billing period, and reconcile statement records against transaction logs, matching transactions against LOAs in the system, and approve completed statement for review by Authorizing Officials
- Authorizing Officials resolve issues with cardholders, and approve statements for payment by the Government after review
- The bank then invoices the Government by transmitting an EDI 821 obligation message, followed by the actual EDI 810 invoice message 2 days later
- DFAS reviews validity of LOAs for each item provided by the bank, and pays invoices with correct LOAs
- The banks can track the status of the statement approval process within the base because they maintain the statement data bases
- Cardholders work with Authorizing Officials and APCs to ensure transfer of LOA data for each purchase; LOAs to both the Bank and DFAS

IMPLEMENTATION OF THE PURCHASE CARD PAYMENT APPLICATIONS IS EXPECTED TO REDUCE INVOICE PROCESSING COSTS, INCREASE REBATES TO THE DOD, AND SUPPORT EXPANSION OF THE PURCHASE CARD PROGRAM BY ELIMINATING PAPER-BASED PAYMENT PROCESSES

PURCHASE CARD PAYMENT PROCESS MODERNIZATION



*** Often customer & cardholder are the same person**

ACCOUNTING PROCEDURES AND BUSINESS PROCESSES SPECIFIC TO INDIVIDUAL DOD ORGANIZATIONS ARE IMPACTING PURCHASE CARD SYSTEM ROLLOUT

- Managers indicate that both purchase card systems are very well suited to payment for cases in which a cardholder deals with a limited number of LOAs for a long period of time, but prove cumbersome for those cases in which one or more LOAs are provided for each purchase
- For example, Department of Navy working capital fund organizations will generate multiple LOAs when a requisition for a new item is received; these LOAs must be verified, communicated to both cardholder and CitiDirect (via the APC), and entered into the system to avoid invoice rejection by DFAS
- Several Contracting Officers use purchase cards as payment vehicles for a wide range of transactions; these users receive LOAs from customers for each item to be purchased, which must be verified and entered into their purchase card payment system
- Local APCs and financial managers are concerned that cardholders will potentially be required to identify and resolve use restrictions and limitations related to specific LOAs prior to monthly statement closeout
- These financial and accounting processes associated with LOA management extend beyond the scope of the account statement payment process addressed by CitiDirect and CARE

THE NAVY'S CURRENT ONLINE WORKING CAPITAL REQUISITION PROCESS GENERATES LINES OF ACCOUNTING FOR EACH REQUISITION MADE BY CUSTOMERS

- For Navy Cardholders using Working Capital Funds, new LOAs are generated each time a requisition for a purchase product to be bought with a purchase card is created; in some cases, multiple LOAs may be created depending on how the item is to be used
- Working Capital Fund LOAs must be approved manually and individually and entered into CitiDirect prior to statement close-out
- This LOA entry requirement will place an administrative burden on cardholders and APCs supporting DoN working capital fund organizations to ensure all LOAs are entered into CitiDirect prior to statement closeout
- As a result, Navy Cardholders using Working Capital accounting rules cannot convert to CitiDirect until the LOA issue is resolved
- Crane Naval Depot is developing a process to simplify LOA management for CitiDirect usage; this process will address:
  - LOA creation
  - LOA transfer into CitiDirect and DFAS

USE OF PURCHASE CARDS FOR BULK PURCHASES CAN ALSO LEAD TO LOA MANAGEMENT PROBLEMS

- A requestor asks a base purchasing agent (i.e., contracting officer) to buy an item, and provides one or more LOAs to be used

- The cardholder, administrative officer, and APC need to ensure these LOAs are provided to the banks and DFAS prior to processing the monthly statement for that purchase

- Problems regularly arise concerning the use of a LOA for these purchases because cardholder, administrative officers, and authorized point of contacts do not have full visibility into the creation and disposition of these LOAs; as a result, DFAS may reject bank invoices due to (perceived) improper LOA usage, requiring resolution at the base level

- Several bases reported that these purchase card transactions constitute a significant share of purchase card dollar volume (in one case about 70% of the bases spending through cards is through this process)

LOCAL FINANCIAL MANAGEMENT STAFF WERE CONCERNED THAT MANY CARD HOLDERS MAY NOT BE PREPARED TO VERIFY AND VALIDATE LOAS

- Most financial management staff believe the purchase card system is well designed for purchase card usage against a small (2-3 maximum) number of LOAs to be used by a cardholder in a given fiscal year

- Many cardholders at bases are lower level military and civilian staff without training or expertise in finance and accounting

- Use of the purchase card systems in situations involving dynamic assignment of LOAs for individual transactions may require these employees to resolve, or assist in the resolution of, LOA issues

- Local financial staff report that many cardholders lack the experience or training to enable them to effectively resolve LOA conflicts

CITIDIRECT IS BEING ROLLED OUT FOR ONLINE APPROVAL AND RECONCILIATION

- Patuxent River Cardholders and Authorizing Officials were to have complete access to CitiDirect on 22 May 2000 and began online reconciliation and approval with the 21 June 2000 billing cycle
- Norfolk was to have its pilot completed for operation in May 2000
  - Pilot testing began in October 1999
  - Full production of the online system was targeted for 22 May 2000
  - Cardholders will be able to view account status, conduct transactions and reconciliation online
  - Installations are taking proactive steps to resolve process impediments
- Navy Working Capital Fund purchase card holders and authorizing officials may not transition until FY2001 when accounting process changes are expected to be available

ROLLOUT OF CARE WILL PROCEED ONCE ARMY PILOT TESTS ARE COMPLETED

- EDI data exchange problems between US Bank and DFAS have delayed the Fort Polk pilot
  - An earlier trial required manual treatment of US Bank's EDI files prior to transmission to DFAS to enable DFAS processing of US Bank invoices
  - As a result, the earlier trial was limited to a few dozen card holders, versus several hundred
- Army APC's and Authorizing Officials have been able to use CARE for account management and statement reviews
- Air Force users have not actively pursued CARE pending completion of pilot trials by the Army
  - There is limited awareness of CARE and the Air Force is waiting for guidance to use it for online verification
  - FirstLink/FirstView is being used by Air Force APCs to manage purchase card accounts
- The Army is currently conducting CARE pilot tests at Ft. Polk and Ft. Rucker

BASE PURCHASE CARD STAFF VOICED CONCERN OVER TRAINING REQUIRED IN SUPPORT OF CARDHOLDER APPLICATION ROLLOUT

- Training has been highly dependent upon static displays, such as slides presented to audiences of APCs, to explain system functions and operation
- Local staff felt this training method was not sufficient for most users who will typically access the application infrequently (1-2 times per month)
- APCs have been expected to pass on training to cardholders and Authorizing Officials in a "train the trainer" model
- Many APCs contacted believe "Train the Trainer" approach may not be sufficient because APC's may not have a sufficiently strong technical understanding of the application
  - APC's did not have any teaching tools beyond slides and a printed manual
  - Lack of interactive training for the trainer makes the application more difficult to grasp for those individuals who are less technically versed
- Several APCs believe turnover among cardholders also presents several challenges
  - Cardholder rosters at a base change by as much as 20% annually
  - Replacement cardholders may not have recent experience in purchase card processing
  - These card holders may require extensive training on the payment systems
- Interactive CD-ROMs were expected to be available at mid-year from both Citibank and US Bank and may better facilitate end user training
- Rollout delays on both systems have reduced the value of training delivered in advance of deployment

MOST LOCAL APCS STATE BOTH CITIDIRECT AND CARE APPEAR TO BE SUITABLE FOR USE BY CARDHOLDERS

- Online bank applications and their functionality generally fulfill the tasks that users need to accomplish in terms of purchase card payment
- APC's report that the systems appear easy to use, but remain concerned about unsophisticated users
  - Cardholders and/or Authorizing Officials may accidentally approve an item for payment more than once, or approve it without first checking to see if the finances are available
  - Cardholders must ensure that they are using the correct LOAs
  - Online bank applications assign only one LOA per line item; Cardholders must be cognizant in dealing with line items that possess multiple LOAs
- Not all APCs interviewed have full confidence in CARE for program management
  - Several APCs prefer the functionality and responsiveness of FirstLink/FirstView over CARE
  - One APC demonstrated that reports in FirstLink/FirstView are more accurate and up to date than the same reports executed through CARE

NO MAJOR PERFORMANCE PROBLEMS WERE IDENTIFIED THROUGH DIRECT OBSERVATION OR USER FEEDBACK WITH RESPECT TO EITHER PURCHASE CARD SYSTEM

- CitiDirect and CARE operation were typically observed from APC or Authorizing Official workstations at the base
- In general, the time required to access CitiDirect and CARE and to perform various functions was equivalent to the time needed to perform similar operations on other commercial sites
- While in some cases slow response times (e.g., more than 45 seconds) were observed for both systems, response times were not consistently slow; further, most APCs indicated that the system responsiveness was generally satisfactory
- APCs at two locations preferred using the legacy system (FirstLink/FirstView) for card management due to better response times of report functions

A NUMBER OF MINOR BUGS OR USER TRAINING ISSUES WERE OBSERVED OR DISCUSSED WITH USERS OF BOTH PURCHASE CARD PAYMENT SYSTEMS

- The CitiDirect 16 minute time-out feature, intended to prevent unauthorized access from unattended workstations, frequently logs out users before the 16-minute duration mark is reached
  - After being timed out for three sessions, users must call the bank help desk, interrupting access to the system
  - In addition, these unexpected logouts disrupt local workflow
- CARE management report data is not synchronized with FirstLink/FirstView report data; several APCs reported that FirstLink/FirstView reports were more accurate and current than corresponding reports from CARE
- CARE material category standard classification codes (SIC) present challenges for APCs
  - CARE uses SIC codes to identify acceptable and unacceptable purchase item categories; however, these codes are often too broad
  - APCs must contact CARE to correct the problem by creating new SIC codes
  -
- US Bank and CitiBank require users to create new passwords every 30 days for use with their online applications
  - Many cardholders who access these systems infrequently may not have (or remember) their passwords, requiring calls to the bank help desk for resolution
  - High turnover in passwords could increase the risk of password distribution to unauthorized staff

"AS IS" PURCHASE CARD PAYMENT PROCESS OVERVIEW
1. The Cardholder makes a purchase using the Purchase Card. If the Cardholder is making a purchase on behalf of a customer, the customer provides a Line of Accounting (LOA) code along with the purchase request; in most instances the customer and Cardholder are the same individual. The Cardholder keeps a log of all purchases made using his Purchase Card(s).
2. The issuing bank mails a monthly paper statement to the Cardholder. The Cardholder verifies individual transactions on the statement against his log, indicates which LOA is to be used for each item and forwards the statement in paper form to the Authorizing Official for his card.
3. The Certifying Official reviews verified statements from all Cardholders under his supervision, and certifies statements as appropriate. Authorized statements are forwarded to a Resource Manager at the base in paper form.
4. The Resource Manager reviews authorized statements for appropriate LOAs as part of the positive funds control system. Statements are forwarded to paying office, typically DFAS, in paper form for final payment.
5. DFAS issues a payment to the issuing bank via EFT

"TO BE" PURCHASE CARD PAYMENT PROCESS OVERVIEW
1. The Cardholder makes a purchase using the Purchase Card. If the Cardholder is making a purchase on behalf of a customer, the customer provides a Line of Accounting (LOA) code along with the purchase request; in most instances the customer and Cardholder are the same individual. The Cardholder keeps a log of all purchases made using his Purchase Card(s).
2. During the course of the month, the Cardholder can access the statement for his Purchase Card account on-line via the issuing bank's web-based payment system. The Cardholder verifies individual transactions on the statement against his log, indicates which LOA is to be used for each item, and when finished marks the statement as verified and ready for on-line review by the Certifying Official.
3. The Certifying Official reviews verified statements and certifies statements via the issuing bank's web-based payment system.
4. The issuing bank transmits an obligation via EDI 821 transaction to DFAS, followed by an invoice via EDI 810 transaction two days later, for each certified card account. DFAS issues a payment to the issuing bank via EFT.

IV. TRANSPORTATION POWERTRACK OBSERVATIONS

THE FOCUS OF TRANSPORTATION INTERVIEWS AT DOD SITES WAS TO ASSESS FACTORS GOVERNING ACCEPTANCE OF POWERTRACK AT THE BASE LEVEL

- PowerTrack is a commercial web-based application from US Bank which supports the bank's freight payment service

PT-24. US Bank offers a payment service to commercial shippers and carriers, in which the bank pays carriers upon shipment and invoices shippers monthly

PT-25. US Bank shipping customers use the PowerTrack application to review and approve payments to carriers made on the shipper's behalf

- PowerTrack eliminates manual processing of freight carrier invoices by DoD shippers and DFAS, reducing paperwork and payment times

PT-26. Under the old process, commercial carriers received payment 30-90 days after shipment delivery

PT-27. PowerTrack significantly reduces this cycle by paying the carriers within 3 days (target timeframe) after US Bank receives notification of shipment delivery

PT-28. Execution of payment electronically through US Bank eliminates paperwork at the shipping location and DFAS

- DoD anticipates that expanded PowerTrack usage will reduce transportation costs, capitalize on best commercial practices, and establish support convergence of documentation/billing processes throughout the Services

- The DoD has deployed PowerTrack to 165 DoD shipping activities, handling 77% of domestic freight shipments

POWERTRACK USES INFORMATION GENERATED BY DoD SHIPPING SYSTEMS, CARRIERS, AND DoD TRANSPORTATION STAFF TO COMPLETE PAYMENTS TO CARRIERS

- Transportation office (TO) staff at a DoD facility use a shipment management system to generate a commercial bill of lading (CBL) at time of shipment

PT-29. Army and Navy use the CONUS Freight Management (CFM) System Electronic Transportation Acquisition (ETA)
PT-30. Air Force uses the Cargo Movement Operations System (CMOS)
PT-31. Defense Logistics Agency (DLA) uses the Distribution Standard System (DSS)

- The PowerTrack application captures shipment transaction data from these systems in CBL form for each base, and shipment completion information from carriers

- US Bank pays carriers based on rule sets defined by the DoD shipping organization

PT-32. Carriers can be paid automatically after delivery, or after shipper review
PT-33. Automatic payment is based upon pre-determined thresholds, shipping types, and other criteria
PT-34. Transportation Office (TO) verifies other shipments for payment by US Bank

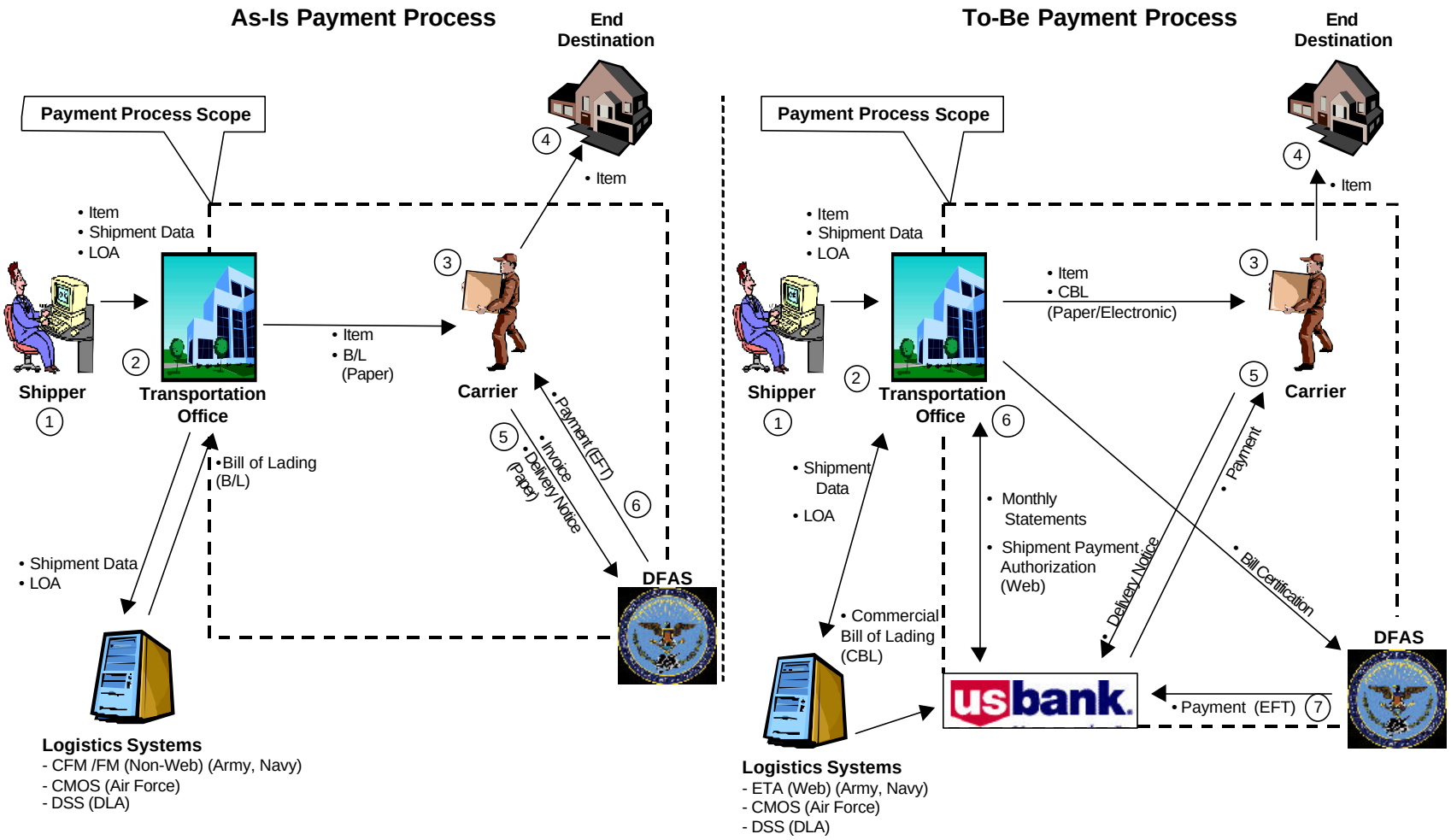
- TO staff use PowerTrack to review carrier invoices to US Bank and US Bank payments to carriers, and to verify and approve other carrier invoices for payment

- US Bank invoices DFAS for payments made to carriers on behalf of each base

- PowerTrack replaces paper flow within the base, between the base and carrier, and carrier and DFAS with web transactions and EDI exchanges

THE USE OF POWERTRACK REDUCES PAPERWORK AND MANUAL APPROVALS FOR PAYMENT OF DOD FREIGHT SHIPMENTS, RESULTING IN RAPID CARRIER PAYMENT AND ELIMINATION OF LATE PAYMENT CHARGES

TRANSPORTATION PAYMENT MODERNIZATION



ETA PERFORMANCE AND ACCESSIBILITY ADVERSELY IMPACT POWERTRACK USAGE AT TRANSPORTATION OFFICES FOR CARRIER PAYMENT PROCESSING

- Transportation employees must create a bill of lading prior to the shipment the leaving base; commercial bills of lading (CBLs) enable US Bank to pay the carriers and invoice DFAS for compensation

- Army and Navy have two systems in which they can create bill of ladings:

PT-35. ETA creates a CBL that is accepted by PowerTrack

PT-36. CFM Field Module (FM) produces a Government bill of lading (GBL)

- In support of mission requirements, shippers often have a brief timeframe to create a bill of lading using their respective systems (i.e. ETA, CMOS, and DSS) to hand off the shipment to the carrier

- ETA performance (e.g., initialization time, query response time) has been extremely slow and often has forced TO staff to use the legacy system CFM/FM, particularly, during busy periods when most shipments are made

PT-37. When shippers encounter difficulties using ETA due to slow response time or inability to access the system, they use CFM/FM to create a GBL

PT-38. CFM/FM has better response time, but cannot pass information to PowerTrack, resulting in DFAS paying the carriers

- Since CFM/FM cannot create a CBL, PowerTrack never receives shipment data, and US Bank is not included in carrier payments for these Army and Navy shipments that cannot be processed using ETA

TRANSPORTATION OFFICE STAFF AT AIR FORCE BASES RELAYED SEVERAL CONCERNS REGARDING POWERTRACK

- Local TO staff expressed concern that use of US Bank/PowerTrack to authorize automatic carrier payments may result in payments for certain delivery features (i.e. overnight delivery by a certain time) that may not have been provided by the carrier

- Transfer of CBL data from CMOS (Air Force) to PowerTrack has been problematic

PT-39. Shipment records are targeted to arrive in PowerTrack 3 days after CBL creation in CMOS, but frequently appear after 7-10 days

PT-40. Shipment information appearing in PowerTrack has been subject to fairly high error rates (e.g. 50% of records in PowerTrack having problems), requiring editing by local staff

- Base IT Staff at one location have refused to implement Powertrack because of security concerns regarding communications supporting the application

PT-41. The base IT/network staff detected transmission control protocol (TCP) session initialization from the PowerTrack server.

PT-42. Local interpretation of DoD and Air Force policies led to the (local) conclusion that PowerTrack was an unacceptable risk

SLOW RESPONSE TIMES FOR POWERTRACK WERE OBSERVED, BUT DID NOT PREVENT SYSTEM USAGE FOR FREIGHT SHIPMENT PAYMENT

- PowerTrack observation at Army and Navy locations showed slow response and startup times

PT-43. Application launch times were usually 3-7 minutes or more following password entry

PT-44. Response to transaction requests: 1-3 minute response time was typically observed

- Because PowerTrack terminates inactive user sessions, users were required to launch the application each time payment status was to be checked; slow startup panel response times discouraged frequent access to the system to check on shipment status; users would generally restrict use of PowerTrack to early morning hours

- Users were able to access PowerTrack and perform shipment payment transactions in PowerTrack; once in the system, users were generally able to perform their tasks, although slow system performance hampered productivity

- One location showed fast application startup (approximately 45 seconds) and response times (15 seconds)

- Unlike shipment generation, payment verification and approval is not a real-time sensitive task with an immediate turn around time; transportation office staff can use PowerTrack to process payments during off-peak hours

THE PERCENTAGE OF SHIPMENTS PROCESSED VIA POWERTRACK IN APRIL 2000 VARIED BY LOCATION

Location	Number of Shipments (April 2000)	Payments Processed by US Bank/PowerTrack (April 2000)
NAS Patuxent River	120	100
NAS Oceana	105	2
Norfolk Navy Base	55	21
Langley AFB	100	80
Ft. Eustis	8	4
Dover AFB	1600 (majority are GBLs)	None
Ft. Polk	11	10

Source: Transporation user feedback during site interviews

POWERTRACK IS VIEWED AS A POTENTIALLY USEFUL TOOL BY BASE TRANSPORTATION OFFICE STAFF AT THE LOCATIONS SURVEYED

- Base Transportation Office staff believe that PowerTrack meets their business needs for carrier payment, and application functionality facilitates daily operation

- The graphical user interface is intuitive and easy to follow; navigation through various system features is comparable to that found on other commercial web sites.

- Transportation office staff regularly use existing DoD logistics systems, and are very familiar with data elements, business rules, and key functions in PowerTrack

- Transportation office staff comment that PowerTrack is relatively easy to use and learn, user-friendly, and staff members generally have a high comfort level with the application as a result of daily usage

ARMY AND NAVY TRANSPORTATION STAFF DISCUSSED AREAS FOR IMPROVEMENTS FOR THE ETA AND POWERTRACK TRAINING PROVIDED BY DOD

- DoD provided ETA and PowerTrack training session at Ft Eustis

PT-45. Shippers received three days of CFM ETA training
PT-46. Participants also received one day of PowerTrack training

- Instructors presented ETA and PowerTrack training modules independently and did not emphasize/describe interdependent application features; as a result, users at the training did not immediately understand the relationships and roles of the two systems

- Classroom presenters used slides and screen shots to describe application features and user procedures; users stated these sessions would have been more informative and productive through use of interactive demonstrations

- US Bank is planning to distribute a new, interactive, training CD-ROM for PowerTrack users in early June 2000

SEVERAL NEAR TERM ACTIONS WILL IMPACT POWERTRACK USAGE IN THE NEXT SEVERAL MONTHS

- CFM/FM is planned to be capable of generating CBLs by July 2000, enabling Army and Navy locations to process more carrier payments through US Bank and PowerTrack

- US Bank will field a new PowerTrack client that should offer an improved startup time

PT-47. The current version requires a download of DoD performance shipper profile data file currently in excess of 2 Megabytes, from US Bank at startup

PT-48. Equivalent data files sizes for commercial PowerTrack users are on the order of 25 kilobytes

PT-49. A new PowerTrack version will allow DoD clients to run with much smaller portions of this data (available now)

- These initiatives could change DoD experiences with PowerTrack

PT-50. The ability to generate CBLs through CFM/FM will require Army and Navy shippers to process more payments through PowerTrack

PT-51. Performance of the PowerTrack application will receive greater attention as dependence on the application increases among these shippers

A NUMBER OF MINOR PROBLEMS WITH THE ETA LOGISTICS SYSTEM AND POWERTRACK WERE REPORTED BY BASE TRANSPORTATION STAFF

- ETA unexpectedly produces GBLs, particularly for Guaranteed Traffic (GT) shipments

PT-52. GT is a Military Traffic Management Command (MTMC) coordinated system for repetitive shipments and for shipments to certain regions, using preferred carriers

PT-53. The majority of shipments at one location are GT and shippers must often override defaulted carriers listed in ETA

PT-54. ETA erroneously produces GBLs and the shipper must detect the mistake prior to finalizing shipment initiatition

- GBLOC data entry appears to cause shipment data to be lost within ETA, requiring users to re-enter all shipment data to generate a CBL

PT-55. Users at Army and Navy locations report that ETA loses the GBLOC data element after the shipper enters it into the system, but prior to finalizing the CBL

PT-56. ETA requires the user to reenter the information, requiring an additional 15-20 minutes to correct the problem

PT-57. One transportation office estimates this event occurs on about 10% of ETA transactions to generate CBLs

- Users shipment data in PowerTrack can differ from data entered in CMOS by base transportation office staff (e.g., prices)

"AS IS" TRANSPORTATION PAYMENT PROCESS OVERVIEW
1. The shipper (customer) requiring movement of an item provides data needed to complete the shipment (e.g., destination, timeframes, item handling instructions), and one or more Line of Accounting (LOA) codes for payment purposes to the base transportation office.
2. Shipping clerks at the base transportation office enter shipment data into a logistics system supporting that service; the system assists in carrier selection and rate estimation, and generates a Government Bill of Lading.
3. The carrier picks up the item to be shipped, often while the Bill of Lading is being prepared by the transportation office. The carrier also receives paper copies of the Bill of Lading for tracking and invoicing purposes.
4. The carrier delivers the item to the end destination.
5. The carrier invoices DFAS for payment.
6. DFAS pays carrier via EFT.

"TO BE" TRANSPORTATION PAYMENT PROCESS OVERVIEW
1. The shipper (customer) requiring movement of an item provides data needed to complete the shipment (e.g., destination, timeframes, item handling instructions), and one or more Line of Accounting (LOA) codes for payment purposes to the base transportation office.
2. Shipping clerks at the base transportation office enter shipment data into a logistics system supporting that service; the system assists in carrier selection and rate estimation, generates a Commercial Bill of Lading (CBL), and forwards shipment CBL data to US Bank.
3. The carrier picks up the item to be shipped, often while the Commercial Bill of Lading is being prepared by the transportation office.
4. The carrier delivers the item to the end destination.
5. The carrier electronically provides a delivery notice to US Bank which is correlated to the bank's record for that shipment (generated in Step 2). Transportation office staff access shipment records through PowerTrack and approves shipments for payment by US Bank.
6. Transportation office accesses PowerTrack monthly for invoices. The certified invoice is sent to DFAS for payment.
7. DFAS pays US Bank for freight payments made to carriers, via EFT, once the certified invoice is received from the shipper.

V. IT INFRASTRUCTURE OBSERVATIONS

Overview…

This section provides an OVERVIEW of it environmentS supporting the purchase card and transportation communities AT THE SEVEN BASES VISITED during this study

- **Local IT capability available to transportation and purchase card users was discussed with Base IT Staff**
  - Desktops configuration: user platform, processor type and speed, hard-drive capacity, and browser version
  - LAN infrastructure: LAN wiring system, types of cabling infrastructure, desktop LAN connectivity, horizontal and LAN backbone wiring, wire speed connecting workstations and switching/routing technology
  - Base network: network configuration, backbone infrastructure, interconnecting LANS to buildings, transmission speed and media, and type of connectivity
  - IT support: users relationship with IT support staff and response to application support

- **Base network connectivity to Metropolitan Area Networks (MANs), Wide Area Networks (WANs) and the Internet were also discussed with base IT Staff**
  - Tidewater Area Navy locations are supported by the Tidewater MAN (TMAN), which will transition to the Hampton Roads Enterprise Network (HREN), both managed by NCTAMSLANT
  - Most locations used DISA's NIPRNet for Wide Area IP data transport; users at two Navy locations reached NIPRNet through the Navy's Smart Link network

- **Round-trip IP network latency measurements to CFM-ETA, PowerTrack, Citidirect, and CARE server sites were performed to develop an understanding of network latency, and the impact on observed application responsibilities**

- **Security management processes were also discussed with base IT staff to assess potential accessibility and performance impacts**

THE OBSERVED DESKTOP PROCESSING CAPABILITIES SUPPORTING TRANSPORTATION AND PURCHASE CARD USERS WERE SUFFICIENT TO SUPPORT THE E-BUSINESS APPLICATIONS

- **The maximum processor and speed observed was at least a Pentium processor at 200 Mhz, Pentium II and Pentium III processors at higher clock speeds were also in use**
  - Only Microsoft Windows 95, 98, and NT operating systems were observed
  - Hard drive space was a minimum of 2 GB and RAM was a minimum of 24 MB

- **Recent desktop upgrades were performed due to Y2K compliance issues; these upgrades modernized many desktops at the bases visited and eliminated a large number of older, less capable PC's based on 286/386/486 processors**

- **Web browser versions met requirements established by US Bank and Citibank; however the 128-bit encryption required by US Bank for Powertrack operation was not installed in workstations at two locations; during interviews 128-bit encryption was installed on these machines with no discernable effect on application performance**

Base Area Networks…

most base-level networks appeared to have good connectivity for both purchase card and transportation users

- **Local Area Network (LAN) Infrastructure supporting purchase card and transportation users provide good connectivity within buildings**
  - LAN Wiring System consist of multi-mode fiber, and shielded/unshielded twisted pair
  - Desktop connectivity to the backbone infrastructure usually provided at 10BaseT (10Mbps)
  - Servers connectivity to the backbone infrastructure dedicated Fast Ethernet connection (100Mbps)
  - Horizontal and Backbone infrastructure contain Shared & Switched Ethernet, Fast Ethernet, and Gigabit Ethernet

- **The majority of the bases visited have a high speed backbone network infrastructure interconnecting most base buildings**
  - Backbone Infrastructures included ATM, SONET, FDDI, Gigabit and Fast Ethernet
  - Single-mode and multi-mode fiber
  - Most bases had fiber optic cable supporting their backbone networks

- **One base network uses point to point microwave transmission links operating between 3 Mbps – 11Mbps as the primary data network media, with less extensive deployment of fiber optic communications**

- **Observed round trip network latencies through base networks were typically less than 10 milliseconds**

EXAMPLE BASE Network sUPPORTS MOST USERS ON THE BASE WITH A sonet OVER atm ARCHITECTURE PROVIDING TRANSPORT TO IN-BUILDING LAns

- **The base network backbone consists of 3 primary switching nodes interconnect via SONET OC-12 links with multi-mode fiber cabling; SONET is running over ATM on the BAN backbone**
- **OC-3 multi-mode fiber links are used to connect 62 base buildings into the base network's ATM backbone**
- **Remote dialup services are used to connect 58 buildings at56Kbps**
- **A Network Address Translation server is maintained at base boundary connection to the local MAN**
- **The commercial Internet is used frequently; base IT staff reported digital radio as the bandwidth-intensive application including the Internet**
- **The MAN operator manages NIPRNet access through a 20 Mbps gateway, and maintains firewalls facing NIPRNet**
- **The supply building (housing purchase card users) does not connect to the Internet through the base network BAN; this building connects to another organization in the area, which in turn connects into Smart Link for Internet access**

EXAMPLE base network #2 connects to user locations through fiber, digital microwave and copper facilities

- **Over 6,000 users are supported by microwave radio point-to-point links operating at 3 / 11 Mbps**
- **Nearly 1,000 users are supported by Fast Ethernet at 100Mbps carried over multi-mode fiber**
- **Several small user communities (totaling less than 1,000 users) connect to the network via copper facilities (T1, E1, BRI ISDN)**
- **Purchase card users reside in a building containing 150 users which connects to the BAN through an E-1 line (2.048 Mbps) on copper cable**
- **At the time of the survey the base transportation office and several other groups totaling 350 users shared a Fast-Ethernet LAN which connected to the rest of the base through an ISDN connection at 128Kbps**
- **A number of upgrades are planned to increase bandwidth throughout the BAN**
  - The 128Kbps ISDN link will be replaced with a Fast Ethernet link over multimode fiber (summer 2000)
  - The microwave links will be upgraded to 10 / 100 Mbps microwave over time
- **The commercial Internet is used frequently; no specific bandwidth-intensive application being used**
- **The MAN operator is implementing a new firewall and proxy server facing NIPRNet to enhance security for MAN user organizations**

Base IT Support…

Transportation and purchase card users were usually satisfied with the technical support provided by base it staff

- **Most users reported that they generally had adequate support for most desktop and network related problems associated with the transportation or purchase card applications**
- **At most locations, IT support personnel supported the transportation and purchase card users as system analysts; these IT staff were not trained on either application**
- **Some users indicated that IT support staff manage transportation and purchase card user issues with a lower priority**
- **In one instance a user described Base IT support staff as being inexperienced and lacking sufficient training (e.g., enlisted personnel on rotation for IT support)**
- **Some sites had an enterprise network management system to monitor, analyze, manage and assess network connectivity problems**
- **Users reported the toll-free support lines for the Transportation and Purchase card application to be helpful with password resets and other application issues, but help desk hours did not match well with local business operations (e.g., 9:00 a.m. help desk start was considered late by some users)**

Base Infrastructure…

Deployment of IT CAPABILITIES TO USER DESKTOPS at a base will vary SUBSTANTIALLY from user to user

- **Base IT staff often indicated that mission critical users have first priority on IT infrastructure upgrades and enhancements**
- **While several base networks at the surveyed locations were frequently served by high capacity backbones, these networks did not always reach all buildings and users within a base**
- **Several IT support and transportation/purchase card staff often noted that recent upgrades to communications and networking platforms were driven by Y2K compliance concerns; prior to these recent upgrades, desktop capabilities and network connectivity were limited for some users (e.g., 286/386 machines, shared Ethernet LANs)**
- **Fiber Optic Vertical and Category 5 Horizontal cabling were the usual in-building wiring infrastructure encountered during base visits**
- **Access to sites on the commercial Internet appeared to be satisfactory at the surveyed locations**

WAN Gateways and Latency…

Connectivity To the niprnet did not appear to be a major FACTOR concerning performance of purchase card and transportation APPLICATIONS AT THE SURVEYED LOCATIONS

- **Traceroutes were performed from purchase card and transportation user workstations at most of the sites during the study, while observing application operations to get an understanding of network to observed response times of network latency**

- **ICMP messages were blocked at Norfolk locations and Langley AFB; thus, traceroutes were not possible from several locations**

- **Traceroutes to the ETA server (maintained by MTMC in Ft. Belvoir) experienced latency delays as high as 300 milliseconds (ms) at Ft. Polk and as low as 50 milliseconds at Pax River**

- **Test to PowerTrack experienced a higher delay then the traceroutes to CFM / ETA, at rates as high 400 ms at Ft. Polk and as low as 100 ms at Pax River**

- **Traceroutes to Citidirect / CARE experience delays as high as 250 ms at Pax River and as low as 100 ms at Ft. Eustis**

- **WAN port speed supporting the base showed no correlation with observed application performance; some sites with less bandwidth per user and higher latencies observed better performance than others with more bandwidth and lower latencies**

Application Performance…

application performance indications were obtained THROUGH USER INTERVIEWS AND DIRECT OBSERVATIONS

- **At most locations the purchase card systems provided acceptable response times, from the point of view of APCs and other staff, with observed times to execute system functions or transition between pages being comparable to other commercial web sites (about 15-30 seconds)**

- **At the time of the Ft. Polk site visit several card management functions in CARE were disabled because of system upgrade activity**

- **Citidirect APCs had noted slow system response times during LOA data entry in late winter in preparation for a planned implementation in March 2000 (since postponed to June)**

- **Purchase card system operation was observed in May 2000 prior to general rollout of large scale pilot testing; therefore, observations of system response times under full load conditions was not possible**
- **Powertrack users often had to endure long application start-up and response times**
  - **Start up times: 5-7 minutes at most locations, 15 minutes or more at Norfolk Navy Base**
  - **Response times (to system functions): 24 minutes at most locations, 5 minutes or more at Norfolk**
- **PowerTrack at one Air Force location showed the best performance among PowerTrack users, with a 45 second start up time and 15 second response time observed during site visits**

Security Management…

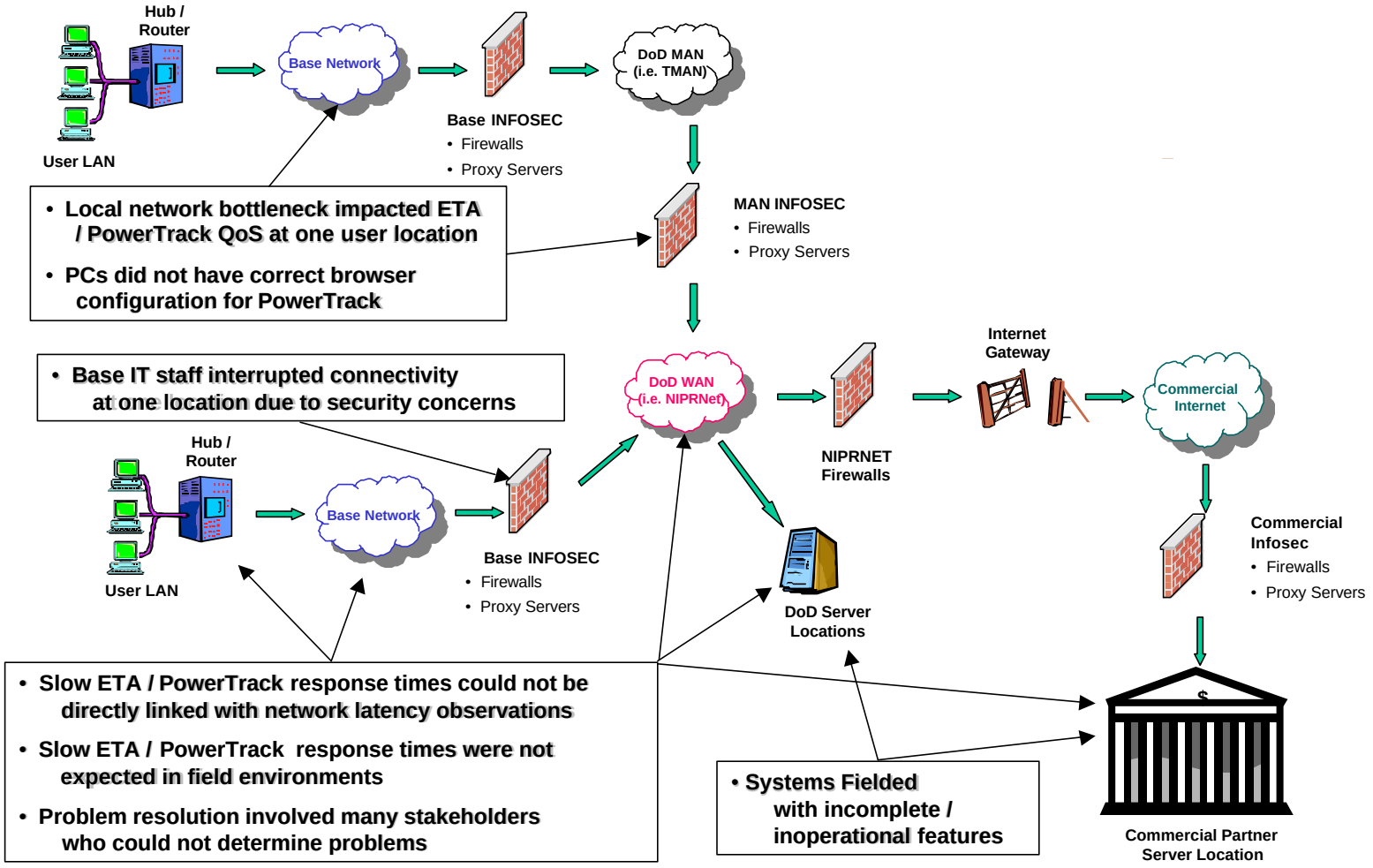
security management appears to be highly decentralized, with considerable RESPONSIBILITY at the base level

- **Individual bases have discretion on information security measures in use locally (e.g., firewalls or IP address translation) regardless of measures take by other organizations**
- **Several bases have implemented firewalls or proxy servers that are managed locally, with guidance and direction from other organizations, in the commercial chain**
- **One location with firewalls facing Smart Link manages this resource in coordination with other peer organizations nationwide**
- **Other bases maintain no firewall at the base level, relying on DISA to maintain positive control over network traffic at the Internet connection points**
- **In addition, several bases have intrusion detection systems that are maintained at the service level (e.g., Ft. Huachuca)**
- **One Air Force location maintains two firewalls, a NIPRNet/Internet proxy server, and network address translation server**
- **In two cases local IT staff either blocked access directly or were considering cutting off access to Power Track for security reasons**
  - **One local base blocked Power Track access due to locally observed server initiated TCP sessions**
  - **Another in a different service was considering blocking Power Track because of Active X**

IT Environment Summary…

SEVERAL FACTORS IMPACTING APPLICATION USABILITY WERE DISCUSSED WITH LOCAL BASE STAFF OR DIRECTLY OBSERVED DURING SITE VISITS

IT INFRASTRUCTURE OBSERVATIONS



NO SINGLE ELEMENT OF IT INFRASTRUCTURE UNDER DOD CONTROL APPEARED TO CONSISTENTLY PREVENT ACCESS OR CONTRIBUTED TO SLOW RESPONSE TIMES OBSERVED WITH COTS applications AT THE SEVEN SITES

- **The spot network latency measurements (using traceroutes) made at the time of the observations did not indicate a persistent base network/WAN/Internet connectivity problem**
- **There was no visibility into server performance at the commercial partner locations (for Power Track, CARE, and Citidirect), or at Government locations (for ETA) during this study**
- **Desktop PCs were configured sufficiently and had sufficient capabilities (processing capacity, RAM, desk space) to support the applications**
- **Workstations lacking 128 bit encryption for Power Track were still able to access the application, and upgrade to 128 bit encryption did not improve start-up or response times**
- **Power Track startup and response times may be related to a 2 Megabyte file that must be uploaded from US Bank by DoD users at login and accessed during system operation**
  - **This file contains DoD specific configuration and business rule information**
  - **File sizes for commercial Power Track users are typically at 25 kilobytes (about 2 orders of magnitude smaller)**

A comprehensive system-wide assessment of e-business applications system performance will be needed to identify and analyze performance problems

- **The field assessment of application performance were limited to qualitative and high-level quantitative observations at a specific period in time on a single day**

- **Latency measurements made at those sites do not indicate immediate network congestion, but do not preclude network performance problems as well**

- **Results of the base IT environment assessment indicate the ETA and PowerTrack application and server platforms may need to be assessed in addition to network and desktop connectivity**
  - Performance of ETA server configuration appeared slow, relative to network latency
  - Client / server application software interaction for PowerTrack may need to be evaluated in detail

- **Purchase card systems were observed without substantial loading from cardholders and approving officials reviewing accounts**
  - CARE and Citidirect server performance under load conditions could not be observed
  - Norfolk region APCs did report slow Citidirect response times in February – March when APCs were loading LOAs in preparation for a March cutover date

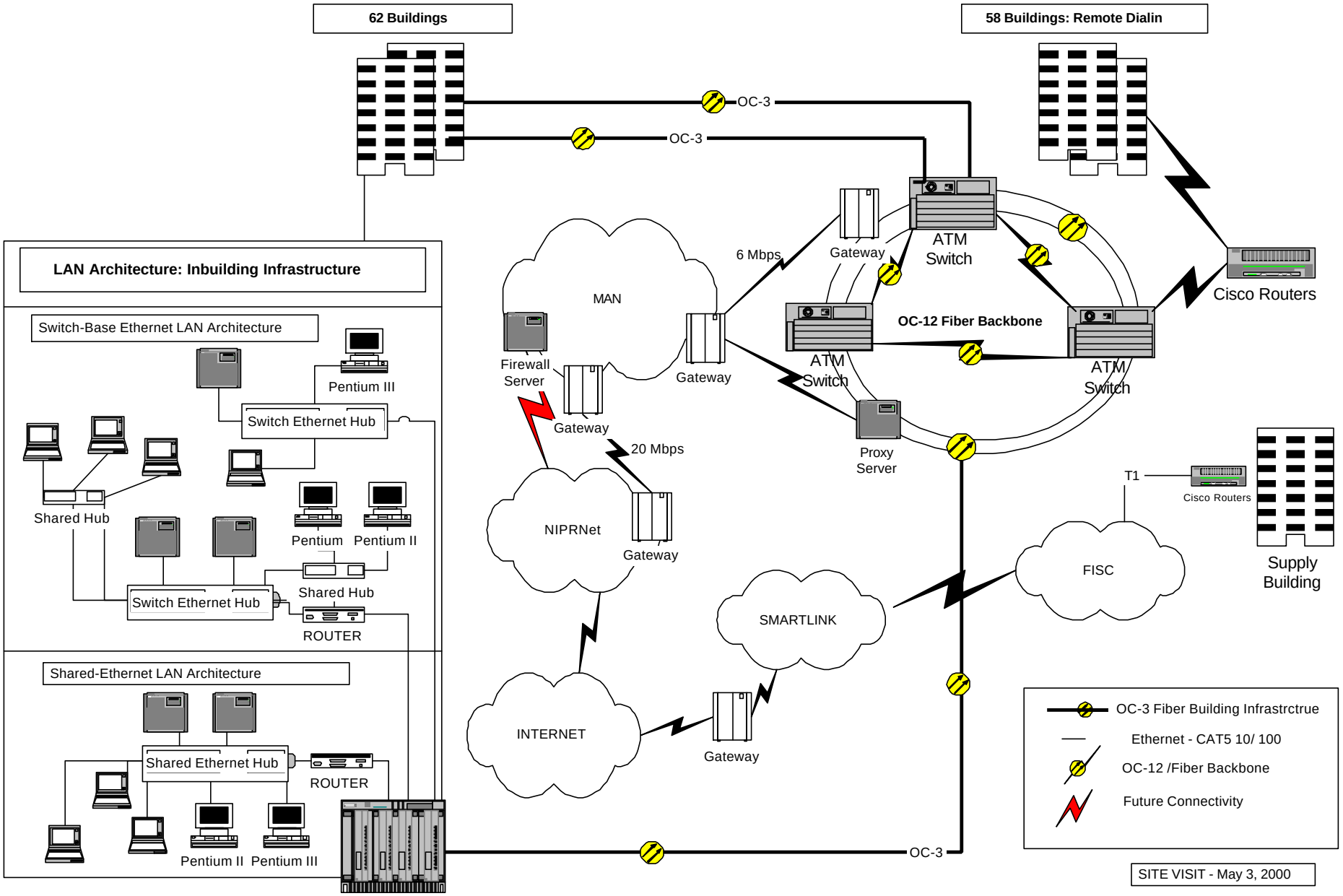
Desktop Characteristics

Site	Transportation Users (PowerTrack Application)	Purchase Card Users (Citidirect, CARE Applications)
NAS Patuxent River	• Pentium II / 200 Mhz • 128 MB RAM • 8 GB • Internet Explorer 4.0	• Pentium II / 200 Mhz • 64 MB RAM • 4 GB • Internet Explorer 4.0
NAS Oceana	• Pentium II / 200 Mhz • 32 MB RAM • 2 GB • Internet Explorer 5.0	• Pentium II / 233 Mhz • 64 MB RAM • 2 GB • Internet Explorer 4.0
Norfolk Navy Base	• Pentium III / 300 Mhz • 130 MB RAM • 2 GB • Internet Explorer 4.0	• Pentium II / 200 Mhz • 32 MB RAM • 2 GB • Internet Explorer 5.0
Langley AFB	• Pentium Pro / 200 Mhz • 32 MB RAM • 2.5 GB • Internet Explorer 5.0	• Pentium III / 300 Mhz • 92 MB RAM • 6 GB • Internet Explorer 5.0
Ft. Eustis	• Pentium Pro / 200 Mhz • 24 MB RAM • 3.0 GB • Internet Explorer 5.0; 40-bit Encryption	• Pentium / 200 Mhz • 64 MB RAM • 3 GB • Internet Explorer 5.0
Dover AFB	**NOT OBSERVED DURING SITE ASSESSMENT**	• Pentium II / 400 Mhz • 64 MB RAM • 6 GB • Internet Explorer 5.0
Ft. Polk	• Pentium / 200 Mhz • 32 MB RAM • 4 GB • Internet Explorer 4.0; 40-bit Encryption	• Pentium II / 400 Mhz • 128 MB RAM • 6 GB • Internet Explorer 5.0

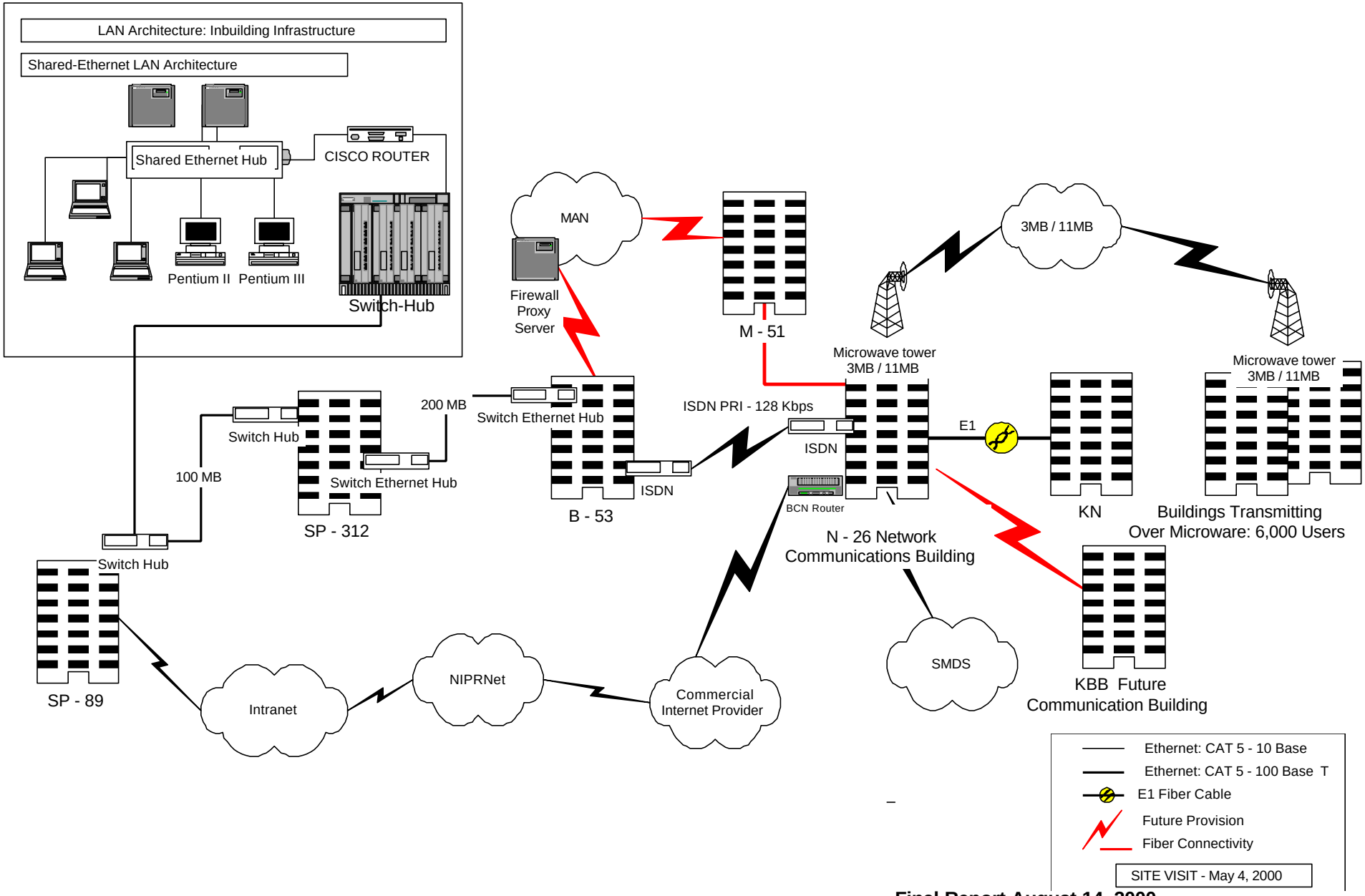
Base NETWORK Characteristics

Site	LAN Desktop Connectivity Media Type	Base Area Network Architecture
NAS Pax River	**10 / 100 Mbps** **10 / 100 Mbps** **Switch and Fast Ethernet**	**FDDI - 100 Mbps**
NAS Oceana	**10 / 100 Mbps** **10 / 100 Mbps** **Switch, Shared, and Fast Ethernet**	**ATM / SONET** **OC-3, OC-12 Backbone links** **OC-3 and Fast Ethernet to buildings**
Norfolk Navy Base	**10 Mbps** **10 Mbps** **Switch Ethernet**	▪ **3 Mbps Digital Radio** ▪ **Copper Interfaces (e.g. BRI, E-1)** ▪ **100 Mbps Fast Ethernet over Multimode Fiber**
Langley AFB	**10 / 100 / 1000 Mbps** **10 Mbps** **Fast, Gigabit, and Switch Ethernet**	**ATM / SONET** **OC-48/OC-12 Backbone** **Fast Ethernet/Gigabit** **Ethernet to buildings**
Ft. Eustis	**10 / 100 – Fast Ethernet** **10 Mbps** **Fast Ethernet**	**ATM/SONET** **OC-12 Backbone** **Fast Ethernet to buildings**
Dover AFB	**10 / 100 Mbps** **10 Mbps** **Switch and Fast Ethernet**	**Fast Ethernet** **100 Mbps over fiber**
Ft. Polk	**10 / 100 Mbps** **10 / 100 Mbps** **Switched Ethernet**	**Gigabit Ethernet Backbone** **1000 Mbps**

EXAMPLE BASE NETWORK #1



EXAMPLE BASE NETWORK # 2



OBSERVED ROUNDTRIP IP NETWORK LATENCY BY APPLICATION

Location	WAN Port Speed	CFM-ETA Latency	PowerTrack Latency	Citidirect/Care Latency
NAS Pax River	10Mbps	<50ms	<100ms	<250ms
NAS Oceana	6 Mbps	<100ms		<150ms
Norfolk Navy Base	20 Mbps	500ms	800ms	
Langley AFB	10 Mbps	Not measured	Not measured	Blocked
Ft. Eustis	18 Mbps	<100ms	<400ms	<100ms
Dover AFB	1.544 Mbps	N/A	N/A	N/A
Ft. Polk	1.544 Mbps	<300ms		

application useability

SITE	Purchase Card	PowerTrack
NAS Pax River	R	E
NAS Oceana	R	R
Norfolk Navy Base	R	E
Langley AFB	R	H
Ft. Eustis	H	R
Dover AFB	R	N/A
Ft. Polk	R	R

4	*Very Good*	2	*Acceptable*	0	*Very Slow*

Source: Purchase card and transportation user feedback and direct observations of application startup and response times

VI. POTENTIAL E-BUSINESS IMPEDIMENTS

THIS SECTION PRESENTS AN OVERVIEW OF POTENTIAL E-BUSINESS IMPEDIMENTS IDENTIFIED DURING FIELD DISCUSSIONS WITH PURCHASE CARD AND TRANSPORTATION STAFF

STRATEGY	**Demonstrated Business Value**: Inconsistent communication of value and benefits hindered implementation of e-Business initiatives
PROCESS	**Local Business Process Impacts**: Deployment of e-Business COTS applications has had unanticipated impacts on existing local business processes **Data Integrity**: Repeated manual entry of Lines of Accounting appears to present a potential data integrity problem for both transportation and purchase card users
TECHNOLOGY	**System Testing and Trial Operations**: Performance problems and interrelationships between applications were not detected because of limited testing of the full system in live environments **Performance Monitoring Capability**: Lack of an enterprise-wide monitoring capability limits ability to collect and correlate e-Business system performance data from DoD and commercial organizations **Enterprise Architecture**: Differences in base-level infrastructure could impact e-Business application response times
CHANGE MANAGEMENT	**Training**: Approaches and techniques were not matched to the needs of the target user communities **Guidance and Direction**: Critical technical and operational guidance on e-Business initiatives does not reach end users, hindering implementation and acceptance
SECURITY	**Information Security Policies**: Independent interpretation and implementation of DoD information security and IA policies by IT organizations can lead to denied access to e-Business applications

INCONSISTENT COMMUNICATION OF VALUE AND BENEFITS HINDERED IMPLEMENTATION OF E-BUSINESS INITIATIVES

- Most local organizations in the survey had been contacted by command organizations regarding the business and operational benefits of the e-Business COTS applications, and had taken steps to implement these systems

- In these situations, the local organizations were aware of the benefits, both to the DoD as a whole and at the base level, in terms of DFAS processing cost reductions and elimination of local paperwork

- Several local organizations did not receive communications regarding purchase card payment applications, and had not begun preparation for implementation

- These organizations estimated that implementation would require 12-18 months to complete after direction had been received

DEPLOYMENT OF E-BUSINESS COTS APPLICATIONS HAS HAD UNANTICIPATED IMPACTS ON EXISTING LOCAL BUSINESS PROCESSES

- Use of ETA and PowerTrack to enable freight payments by US Bank had unintended consequences at local transportation offices supporting Army and Navy facilities

PT-58. The need for these offices to create a Bill of Lading in real time for the carrier often prevented the use of ETA because of performance/response time reasons

PT-59. Transportation clerks often resorted to using the legacy CFM/FM system to generate Government Bills of Lading, which precluded US Bank from processing payment for shipments

PT-60. Payments for these shipments were managed via the legacy paper process

PT-61. At locations where transportation office staff are prevented from using CFM/FM, shipment processing is impacted because of difficulties in using ETA

- Purchase card payment automation through Citidirect and CARE will impact local financial and accounting processes

PT-62. Several locations surveyed routinely provide Cardholders with one or more unique LOAs for each purchase, which will need to be loded into Citidirect and CARE before statements can be verified and approved on line

PT-63. Local verification of LOAs and coordination with DFAS must be synchronized with the turnaround time requirements of the purchase card systems, causing business process impacts at the base level

- Several APCs and TOs were unsure of new escalation processes for contesting and resolving billing disputes with Citibank and US Bank that they unable to resolve on their own

- While these business process impacts will not halt system rollout, interim workarounds and rollout delays represent potential opportunity costs to the Department

- Future E-business applications targeted for enterprise-wide rollout are likely to have other impacts on local business processes, particularly in those cases in which Services or individual command organizations have implemented unique processes in a functional area

REPEATED MANUAL ENTRY OF LINES OF ACCOUNTING APPEARS TO PRESENT A POTENTIAL DATA INTEGRITY PROBLEM FOR BOTH TRANSPORTATION AND PURCHASE CARD USERS

- APCs and TOs commented on the need to enter LOAs manually into the purchase card systems and PowerTrack, both prior to system cutover and during normal operations; this entry process is typically done manually by local staff
- The relatively unstructured or non-standard format for LOAs has led to data entry errors
- Data integrity could be further exacerbated by manual handoffs of LOAs between the end customer and the transportation office or purchase card holder
- Funds associated with LOAs may have usage restrictions that are not understood by the end customer or may not be communicated fully to the cardholder or shipping office authorizing a payment
- As a result, DFAS or other financial support organizations may disallow all or part of invoices associated with erroneous or incorrect use of LOAs
- Other payment processes to be supported by e-Business applications, such as Defense Travel System, which require similar LOA reconciliation, may encounter these problems as well

PERFORMANCE PROBLEMS AND INTERRELATIONSHIPS BETWEEN APPLICATIONS WERE NOT DETECTED IN TESTING OF THE FULL SYSTEMS IN LIVE ENVIRONMENTS

- Application performance and response time issues potentially impacting usability were not anticipated in rollout schedules
- Field trails and initial use of these systems uncovered several issues that could have been detected and resolved in an integrated system test or beta test process

PT-64. EDI linkage problems (e.g., CARE and DFAS, CMOS and PowerTrack)
PT-65. CitiDirect premature timeouts
PT-66. Impact of ETA performance on PowerTrack usage
PT-67. Lengthy PowerTrack launch times

- Resolution of technical problems encountered after rollout often required involvement of base IT, DISA, and technical staff from the military or commercial organization providing the application
- While problems were frequently resolved, the application of lessons learned to other locations was difficult because resolution efforts tended to be individual, separate efforts

LACK OF AN ENTERPRISE-WIDE MONITORING CAPABILITY LIMITS ABILITY TO COLLECT AND CORRELATE E-BUSINESS SYSTEM PERFORMANCE DATA FROM DOD AND COMMERCIAL ORGANIZATIONS

- The COTS applications observed are very complex end to end systems incorporating subsystems maintained by multiple technical organizations (e.g., base level, DISA, DFAS, commercial partner)
- Start up and response time performance experienced by end users depends upon capacity limitations and loading at different points in these systems; subsystem utilization at all points varies rapidly during the day complicating instantaneous assessment of specific problems
- Trouble shooting and diagnosis of application performance problems will require collection and correlation of utilization and performance measures from all subsystems, and hence multiple organizations maintaining these subsystems, which is possible on a limited basis today
- As e-Business applications critical to DoD operation proliferate, the Department will increasingly need to monitor actual system performance and resolve problems using data from both internal (DoD) and external parties

DIFFERENCES IN BASE-LEVEL INFRASTRUCTURE COULD IMPACT E-BUSINESS APPLICATION RESPONSE TIMES

- A key success factor for several Management Reform Initiatives will be the availability of a basic level of IT support capability for end users
- While no user organization contacted in the site surveys had substantial weaknesses or deficiencies in desktop resources or network connectivity, not all users at these bases had the same level of connectivity or desktop computing capabilities

PT-68. High capacity base networks typically connect to a majority of buildings, reaching 80%-95% of users
PT-69. Many users received desktop upgrades from 286/386 to Pentium machines for Y2K Compliance

- In addition, many DoD installations outside the seven locations surveyed will require substantial modernization of on-site base networks
- Future upgrades to base users will be prioritized based on mission requirements and available funding; not all users may experience the same IT capability levels over time
- Decisions regarding NIPRNet WAN connectivity (and accessibility of commercial services on the Internet) at many locations were frequently made or influenced by stakeholders based on factors which do not fully address IT performance (e.g., available funding)
- The technology capability levels required for E-business will expand over time as the technology capability levels available in the commercial world steadily progress (e.g., support for full motion video, VoIP)
- The future level of IT capability available to DoD users may vary substantially based on each user's role relative to mission, funding available to the user's organization, and other factors

TRAINING APPROACHES AND TECHNIQUES WERE NOT MATCHED TO THE NEEDS OF THE TARGET USER COMMUNITIES

- Users reported that the "train the trainer" approach wasn't always sufficient, particularly for the general DoD population

PT-70. The designated trainer might not always be well-versed in the details of a specific application, particularly recent configuration changes

PT-71. Application training could take more time than is currently needed for purchase cards, presenting a new burden for APC staff and cardholders

PT-72. Limited use and churn among cardholders could require substantial retraining

- Purchase card training has been provided before the applications have been available; APCs felt that the utility of this training had diminished because of these delays
- Many interviewees commented on the lack of interactive demonstrations or test cases during the formal training sessions, and believed the use of presentation slides or screen shots did not provide good insight into system operation
- Transportation users indicated that an integrated case study, spanning a shipment origination in ETA or CMOS and shipment verification and payment authorization through PowerTrack, would have been helpful in understanding the roles and relationships between the two systems

CRITICAL TECHNICAL AND OPERATIONAL GUIDANCE ON E-BUSINESS INITIATIVES HAS NOT ALWAYS REACHED END USERS, HINDERING IMPLEMENTATION AND ACCEPTANCE

- In two instances purchase card APCs were not actively planning CARE implementation because they had not received guidance pr direction from their command organizations on CARE implementation status or timeframes

PT-73. No training planned
PT-74. Limited use of CARE for cardholder account management
PT-75. No cutover timeframe established

- Communications of specific technical requirements for these applications to users and base IT staff was often incomplete

PT-76. Base IT staff did not always know about the existence or use of the purchase card applications or PowerTrack
PT-77. Two PCs supporting PowerTrack did not have the required 128 bit encryption for Microsoft Internet Explorer (although the application was usable at these locations)

- In general, users in both functional communities at most locations have either implemented or are actively planning implementation of PowerTrack and the purchase card applications

INDEPENDENT INTERPRETATION AND IMPLEMENTATION OF DOD INFORMATION SECURITY AND IA POLICIES BY IT ORGANIZATIONS HAS LED TO DENIED ACCESS TO E-BUSINESS APPLICATIONS

- Base IT management at all locations understood the need to implement security directives from DoD and the Services, and had implemented various measures as required
- At the seven sites visited multiple parties are typically involved in making or influencing decisions on local base information security, which in turn impact Internet access for base users

PT-78. Base IT staff for local firewalls and address translation
PT-79. Command organizations (e,g., CINCLANTFLT, Army Signal Command, Air Combat Command)

- The potential for decentralized decision making to interrupt access to applications appeared in several instances

PT-80. Local Base IT staff at one location decided not to deploy PowerTrack due to security concerns
PT-81. Network management at another base described a pending information security decision at the command level which could block access to PowerTrack at multiple bases

- At one base the purchase card and transportation communities use separate WAN connections managed by separate organizations to reach the Internet; each organization is making separate decisions regarding information security measures and COTS application access

VII. FEDERAL AND COMMERCIAL PERSPECTIVES

Overview…

MANAGEMENT AT SEVERAL (NON-DOD) FEDERAL AGENCIES AND COMMERCIAL ORGANIZATIONS WERE INTERVIEWED TO DETERMINE POTENTIAL LESSONS LEARNED RELATIVE TO DOD E-BUSINESS IMPEDIMENTS

- The primary purpose of these discussions was to assess how other organizations are addressing the types of potential impediments to e-Business implementation that were identified during the seven site visits

- The impediments described in the previous section served as the basis for these discussions

- These interviews focused on lessons learned by these organizations, and potential application in the DoD environment

PT-82. Investigate how organizations manage the impact of these impediments
PT-83. Identify business practices or approaches used
PT-84. Evaluate additional challenges and possible impediments faced by these organizations

- Interviews were conducted in person with technical and business management staff, and usually lasted 1-2 hours

THREE FEDERAL AGENCIES AND ONE COMMERCIAL MANAGEMENT SYSTEMS PROVIDER COMPRISED THE SET OF ORGANIZATIONS CONTACTED IN THIS SURVEY

Organization	Description	e-Business Focus
Federal Benefits Agency	• Administers a broad range of benefits to the public • Tradition of decentralized operations, with considerable autonomy within local operation units	• Applying e-Business to internal operations, particularly with respect to finance and acquisition • See e-Business approach as critical to success of key acquisition initiatives, including purchase card • Attempting to leverage recent centralization of key business functions at the department level
Federal Regulatory Program Office	• Administers nationwide inspection and compliance program involving 10,000 medical organizations • Reliance on state-level and industry groups for key service capabilities	• Applying e-Business to internally link key program stakeholders • Key e-business challenges include buy-in, training, technology platform performance
Federal Management Agency	• Provides acquisition and management services to Federal Government organizations • Major policy-making and oversight roles in acquisition	• Major role in facilitating Federal Government e-Business PT-85. Intra-government PT-86. Business to/from Government PT-87. Government to Citizen • Incubates selected e-Business initiatives from other organizations
Commercial Enterprise Management Firm	• Provides network and application system performance and availability software to commercial and Government organizations	• Visibility into industry trends and practices concerning performance and availability measurements • Implementing approaches to "end-to-end" performance management for a wide range of commercial firms

DISCUSSIONS WITH THESE ORGANIZATIONS CENTERED ON SPECIFIC TYPES OF IMPEDIMENTS FACING DOD

E-BUSINESS IMPEDIMENTS BY CAPABILITY AREA	Federal Benefits Agency	Federal Regulatory Program Office	Federal Management Agency	Commercial Enterprise Management Firm
Strategy - Demonstrated Business Value	4	0	4	0
Process - Local Business Process Impacts - Data Integrity	4	2	4	0
Technology - System Testing and Trial Operations - Performance Monitoring Capability - Enterprise Architecture	0	4	0	4
Change Management - Training - Guidance and Direction	2	4	2	0
Security - Information Security Policies	0	2	2	4

4	*Primary Focus of Discussion*	2	*Secondary Focus*	0	*Not Discussed*

THE BENEFITS AGENCY FACED AN IMMEDIATE REQUIREMENT TO STREAMLINE PURCHASE CARD PAYMENT, LEADING TO A DIFFERENT APPROACH TO PAYMENT PROCESS AUTOMATION

- The agency views implementation of the purchase card program as a strategic goal in its acquisition and procurement reform efforts

- The agency saw electronic review and payment of purchase card charges as a critical success factor as the purchase card program underwent very rapid growth in the last few years

PT-88. Purchase card dollar volume has grown from $0.5 million in FY1996 to over $500 million in FY2000 (expected)

PT-89. Cardholder ranks have grown to 33,000 employees

PT-90. Agency management believed continued dependence on paper processing for payment would prevent program expansion

- At the same time, the agency was faced with the challenges of program implementation by autonomous local operating units, which retained considerable control over local business processes

- Rather than relying on individual cardholders to verify and approve charges before payment, the agency elected to pay card charges as they arrive from the bank, and perform itemized verification by local cardholders after payment

PT-91. The bank downloads all card charges for the previous day to the agency's financial management system; these charges are paid by the agency within a few hours of posting by the bank

PT-92. Card charge detail is forwarded to local units, which require cardholders to review card activity through an existing client-server system

PT-93. Local units are responsible for identification and resolution of errors allocation problems

- The agency makes extensive use of highly centralized finance and accounting business processes and management systems, which enable agency-level payment and communication of

card detail between headquarters and local units/users, and supervision of local card verification activity

THE ELECTRONIC PURCHASE CARD PAYMENT PROCESS DIFFERS FROM THE DOD TARGET MODEL IN SOME KEY AREAS

Strategy - Demonstrated Business Value	• Like DoD, successful purchase card implementation was recognized and promoted as an agency-wide goal • Local performance goals have been established for program performance, card review and verification, and problem resolution
Process - Local Business Process Impacts - Data Integrity	• A single agency-wide financial management and accounting system provides a framework for common business practices across a traditionally decentralized organization • Agency payment of card charges upon receipt from bank removes cardholders from the critical path for payment • Mandated local review and common financial processes and systems allows the agency to set common performance measures for local managers to monitor cardholder verification activity • Common financial processes and systems also allows single account codes (e.g., LOAs) to be established for each cardholder, simplifying card verification
Change Management - Training - Guidance and Direction	• The agency mandates cardholders receive four hours of program training on systems and processes; local units have discretion on how this training is to be provided • The agency attempts to enable local management to retain control over local reconciliation activity, provided certain performance measures are met; common processes and systems allow consistent monitoring of these measures

THE REGULATORY PROGRAM OFFICE MUST ADMINISTER A COMPREHENSIVE CERTIFICATION, INSPECTION, AND COMPLIANCE PROGRAM INVOLVING A LARGE NUMBER OF STAKEHOLDERS OUTSIDE THE FEDERAL GOVERNMENT

- The program office mission is to manage the regular accreditation, certification and inspection of about 10,000 medical facilities nationwide

- The program office relies heavily on states and a non-government organization (NGO) to carry out these functions

PT-94. Four states and the NGO perform accreditation
PT-95. Three states and the program office perform certifications
PT-96. Inspection are performed on site almost entirely by state government employees, operating under contractwith the Federal Government

- The office has developed a comprehensive web-based e-Business application to support all key program mission requirements and manage/facilitate information exchange between stakeholders

PT-97. Collect accreditation and certification data from states and NGO
PT-98. Support mobile inspectors in site visits
PT-99. Provide management reports to stakeholders for audit and oversight

- Key challenges that have arisen in fielding and supporting this application have been:

PT-100. Maintaining business process and data integrity among stakeholders
PT-101. Training stakeholder and mobile inspectors
PT-102. Protecting site data and ensuring security

THE PROGRAM OFFICE MAINTAINS CONTROL OVER ALL CRITICAL ASPECTS OF THE WEB APPLICATION SUPPORTING THE REGULATORY PROCESS

Process - Local Business Process Impacts - Data Integrity	• Program office must constantly work with state offices and NGOs to ensure consistent interpretation of business rules • Contractual relationships with states and NGO are critical in managing business process consistency and data integrity
Technology - System Testing and Trial Operations - Performance Monitoring Capability - Enterprise Architecture	• All user features in new releases and all interfaces between the compliance system and third party systems are fully tested on a standalone production environment before release • Program office provides fully equipped laptops to mobile inspectors, financed through user inspection charges • Full control over user clients, network access, application software implementation, system infrastructure have allowed the program office better visibility into overall system performance resolution of system problems
Change Management - Training - Guidance and Direction	• Program office provides three levels of inspector training; office staff contract out for the first two levels, and conduct the third in-house • Third-level training integrates coverage of inspection procedures and application operation, and full inspection scenarios
Security - Information Security Policies	• Use of commercial Internet for application access by mobile inspectors was considered too risky, leading to implementation of direct-dial access with username/password protection • Mobile inspector access to other agency systems is prevented by firewalls

THE FEDERAL MANAGEMENT AGENCY VIEWS E-BUSINESS AS A CRITICAL DISTRIBUTION METHOD FOR THE SERVICES IT PROVIDES TO OTHER FEDERAL ORGANIZATIONS

- Customer service and support is viewed as critical to the agency's mission to provide a range of acquisition and management services to federal organizations
- The agency is under continuous pressure to control costs for its services
- E-Business offers the agency the ability to greatly enhance its links to its customers
- E-Business is central to the agency's strategy of extending its services to a broader range of customers

PT-103. Extend market reach throughout Federal Government
PT-104. Leverage capabilities of limited size work force
PT-105. Reduce costs through streamlining/reengineering current business processes related to service delivery

- The agency is aggressively deploying e-Business capabilities to link its internal service delivery operations with Federal customers and key suppliers and industry partners

SEVERAL GUIDELINES GOVERN THE ROLLOUT OF E-BUSINESS CAPABILITIES BOTH WITHIN THE AGENCY, AND BETWEEN THE AGENCY AND ITS CORRESPONDENTS

Strategy - Demonstrated Business Value	• Agency policy regarding e-Business initiatives sets three conditions for implementation: PT-106. Demonstrated cost effectiveness over life cycle PT-107. Low barriers to implementation within target user groups PT-108. Successful promotion of the initiative among all stakeholders
Process - Local Business Process Impacts - Data Integrity	• E-Business initiatives are assessed against two potential scenarios PT-109. Automate an existing process, limiting scope of e-Business initiative PT-110. Perform a comprehensive redesign of the traget process and related processes to accomplish a step change in performance improvement and cost effectiveness • The agency has been willing to aggressively invest in new business processes, and views the "pain" due to radical process redesign as preferable to the costs and performance impacts which result from automating pieces of inefficient legacy processes
Change Management - Training - Guidance and Direction	• Systems facing the customer necessarily must be simple and easy to use and understand, since the agency cannot place a training burden on customer organizations
Security - Information Security Policies	• Accessibility across agency boundaries presents security problems which are not easily addressed in the current environment • Deployment of PKI, with digital certificate and signature capabilities, will probably be the initiative which addresses extant security concerns

TECHNOLOGY AND SECURITY PRACTICES FOR WEB-BASED APPLICATIONS ARE STILL EMERGING IN THE COMMERCIAL ENVIRONMENT

- Key performance measures for web-based applications for most commercial organizations are availability and transaction response time; however, many commercial organizations are not equipped to fully monitor web-based application performance from a user perspective
- Many organizations do not have the ability to measure performance beyond the boundaries of their infrastructure (internal network and server environment)
- Many commercial organizations make limited use of network modeling and analysis during web-based application design
- Security measures such as firewalls and address translation can impede the ability of many organizations to track and monitor application performance on an end to end basis
- Although early adopters and technology leaders are seeing success in several segments, the rapid pace of technology change and new technology introduction, coupled with the finite time required to fully exploit new capabilities, contributes to uneven diffusion and slows the emergence of comprehensive best practices

DOD FACES CHALLENGES RELATIVE TO WEB-BASED APPLICATION PERFORMANCE, SIMILAR TO THOSE IN THE COMMERCIAL ENVIRONMENT

Technology - System Testing and Trial Operations - Performance Monitoring Capability - Enterprise Architecture	• Primary testing focus for web-based applications for most organizations is on components directly managed by that organization; joint testing across organizational boundaries is an immature capability in most organizations • Complete end-to-end performance measurement of real-time application operation increasingly viewed as critical by most organizations; however, technology and tools to facilitate these measurements are not in place at most organizations • Two approaches to performance measurement in Internet environment are emerging which can support e-Business performance analysis PT-111. Passive monitoring of live transactions PT-112. Test/simulated transaction monitoring in under operating conditions • Developing an end-to-end performance monitoring capability is an enterprise-wide decision impacting multiple elements of the enterprise information architecture
Security - Information Security Policies	• Network security policies can impede performance measurement and analysis in live environments • Organizations are looking to SNMP v3 capabilities to facilitate secure network and performance monitoring and analysis across network and organizational boundaries

PRACTICES FROM THE SURVEYED ORGANIZATIONS ALIGN WITH SOME OF THE IMPEDIMENTS TO E-BUSINESS IN THE DOD ENVIRONMENT

Strategy - Demonstrated Business Value	• E-Business objectives must be firmly established as agency wide goals to facilitate local acceptance of initiatives PT-113. Cost avoidance benefits accrue to local users PT-114. Minimized barriers to implementation
Process - Local Business Process Impacts - Data Integrity	• Implementation of standardized financial processes department-wide enables comprehensive redesign of payment processes, while allowing local control over execution • Considerable value is seen in "risky" comprehensive business process redesign, versus process/subprocess automation, in support of e-Business initiatives
Technology - System Testing and Trial Operations - Performance Monitoring Capability - Enterprise Architecture	• Web-based applications involving multiple organizations require comprehensive testing prior to release; agencies need to take a strong lead role to ensure testing all system components • Approaches are emerging for end-to-end application performance monitoring across the Internet and organizational boundaries; these decisions must be made on an enterprise level, and will require an enterprise-wide strategy • End user IT capabilities are provided through the sponsoring organization to ensure quality of service and system availability
Change Management - Training - Guidance and Direction	• Training must consider the capabilities and control over the end user population PT-115. Comprehensive training with integrated case studies/scenarios where user reports directly to the organization deploying e-Business system PT-116. Minimum of training/simple operation where user lies beyond management control (e.g., user as stakeholder/customer)
Security - Information Security Policies	• Security for e-Business initiatives needs to be evaluated and implemented on an enterprise-wide basis as part of the overall e-Business architecture

VIII. RECOMMENDATIONS AND ACTION STEPS

THIS SECTION PROVIDES RECOMMENDATIONS AND ACTION STEPS FOR DOD THAT EMERGED FROM STUDY FINDINGS AND OBSERVATIONS

- Recommendations and action steps cover all five capability areas for e-Business

PT-117. Strategy
PT-118. Process
PT-119. Technology
PT-120. Change Management
PT-121. Security

- Recommendations are based on assessment of summary observations from the site surveys in both the purchase card and transportation/PowerTrack functional areas, and the base IT environment

- Action steps are provided for each set of recommendations in a capability area

- Responsible organizations are also identified for each action step, and include the following parties:

PT-122. DoD Chief Information Officer (DoDCIO)
PT-123. DoD Deputy CIO
PT-124. Joint Electronic Commerce Program Office (JECPO)
PT-125. DoD Electronic Business (EB) Board of Directors
PT-126. DoD CIO Executive Board
PT-127. Defense Information Systems Agency (DISA)
PT-128. Undersecretary of Defense Comptroller (USD Comptroller)
PT-129. JITC
PT-130. Military Departments (Mildeps)
PT-131. DOD Functional Staff

THIRTEEN RECOMMENDATIONS TO SUPPORT THE DOD ENVIRONMENT FOR E-BUSINESS COTS IMPLEMENTATION HAVE BEEN DEVELOPED BASED ON FEEDBACK AND OBSERVATIONS

Strategy	14. Develop a strategy and common methodology for deployment of DoD e-Business COTS-like applications and e-Business services that addresses all aspects of system/service implementation, leveraging existing frameworks and methodologies as appropriate 15. Apply a cross-Service review process for e-Business initiatives which ensures all DoD components have input into assessment, selection and approval of Department-wide efforts
Process	16. Establish a change management process to identify and address cross-functional impacts of proposed e-Business initiatives on local business processes, and provide feedback to program management on problems and resolution 17. Identify and evaluate impact of legacy accounting conventions (e.g., LOA) , and other legacy data, on DoD e-Business initiatives
Technology	18. As part of e-Business methodology development, include standards and guidelines to ensure adequate system testing is incorporated into planning and implementation processes for all DoD e-Business initiatives, and to ensure adequate field-testing and trials are conducted prior to rollout 19. Ensure DoD (e.g., GIG) architectures include e-Business IT capabilities required by DoD 20. Implement an end-to-end performance monitoring capability to support e-Business systems 21. Establish formal feedback mechanism to capture and resolve Quality of Service issues with Commercial partners
Change Management	22. Develop incentives to encourage implementation of, and accountability for, e-Business by DoD Components 23. Create communications plans that leverage existing and evolving e-Business governance structures to provide guidance and direction to DoD end-users when fielding a modified or reengineered process 24. Develop a DoD-level training plan to ensure adequate training is incorporated into planning and implementation processes for all DoD e-Business initiatives. Ensure training is tailored to the e-Business application, capabilities of the target user community, business process, and local environment
Security	25. Establish standards and guidelines for DoD-wide information security compliance for e-Business initiatives 26. Document and reconcile security issues for each e-Business initiative at the department level to ensure visibility and awareness of compliance to local security organizations

RECOMMENDATION 1: DEVELOP A STRATEGY AND COMMON METHODOLOGY FOR DEPLOYMENT OF DOD E-BUSINESS COTS-LIKE APPLICATIONS AND E-BUSINESS SERVICES THAT ADDRESSES ALL ASPECTS OF SYSTEM/SERVICE IMPLEMENTATION, LEVERAGING EXISTING FRAMEWORKS AND METHODOLOGIES AS APPROPRIATE

RECOMMENDATION 2: APPLY A CROSS-SERVICE REVIEW PROCESS FOR E-BUSINESS INITIATIVES WHICH ENSURES ALL DOD COMPONENTS HAVE INPUT INTO ASSESSMENT, SELECTION AND APPROVAL OF DEPARTMENT-WIDE EFFORTS

Strategy Observations	Discussion
• Planning and implementation of COTS-like web service applications was based on existing software implementation methodologies	• Program managers for e-Business implementations need access to a common approach which addresses the unique characteristics and challenges of COB implementation for those initiatives
• Interactions between e-Business applications and local business processes, base IT architectures, information security, and other (related) systems were not fully understood at system rollout	• Because of the contributions required from DoD components, and the need to cooperate across traditional organizational boundaries, DoD components need to assess impact of e-Business initiatives prior to implementation
• Areas of responsibility for different components involved in e-Business deployment efforts are not consistently defined across organizational boundaries	• New e-Business systems and processes must support local operations to be fully embraced by DoD staff

DOD SHOULD DEVELOP A COMMON STRATEGY AND METHODOLOGY FOR E-BUSINESS INITIATIVES INVOLVING COTS APPLICATIONS TO IDENTIFY AND RESOLVE KEY IMPLEMENTATION ISSUES

Action Steps	Responsibilities
1. Create assessment template for e-Business evaluation which addresses: full life-cycle costs, savings, performance benefits, operational impacts	EB Board of Directors, JECPO, USD Comptroller
2. Create an Implementation Plan template for e-Business initiatives which addresses: software development, testing, field trials, training, rollout, marketing/communication plan	EB Board of Directors, JECPO
3. Create an IT Architecture/Information Security Impact Assessment template for e-Business initiatives which addresses all key characteristics of the user IT environment (e.g., network impacts, desktop requirements, security, etc…)	EB Board of Directors, JECPO
4. Designate CIO Executive Board as DoD e-Business review agent	CIO Executive Board

RECOMMENDATION 3: ESTABLISH A CHANGE MANAGEMENT PROCESS TO IDENTIFY AND ADDRESS CROSS-FUNCTIONAL IMPACTS OF PROPOSED E-BUSINESS INITIATIVES ON LOCAL BUSINESS PROCESSES, AND PROVIDE FEEDBACK TO PROGRAM MANAGEMENT ON PROBLEMS AND RESOLUTION

RECOMMENDATION 4: IDENTIFY AND EVALUATE IMPACT OF LEGACY ACCOUNTING CONVENTIONS (E.G., LOA) , AND OTHER LEGACY DATA, ON DOD E-BUSINESS INITIATIVES

Process Observations	Discussion
• Working Capital Fund (WCF) and other processes generate unique Lines of Accounting (LOA) for each purchase, especially bulk purchases, requiring immediate entry of multiple LOAs into the Purchase Card payment system to prevent invoice rejection • Potential LOA conflicts concerning specific purchases must be identified and resolved by Cardholders without full background or experience in DoD financial practices • Slow response time and the immediate need for transportation offices to move shipments prevented the use of ETA for many shipments, and thus precluded the use of PowerTrack for freight payment at Army and Navy locations	• Payment process automation creates impacts to manual, labor-intensive finance and accounting processes that interface with the payment process • Other e-Business initiatives which affect payment processes (e.g. Defense Travel System) could have similar impacts • Local business process impacts caused by interrelationships and dependencies between e-Business and COB applications and DoD systems and processes must be understood

E-BUSINESS IMPACTS ON BUSINESS PROCESSES NEED TO BE FULLY UNDERSTOOD TO FACILITATE DEPLOYMENT, PARTICULARLY WITH RESPECT TO FINANCE AND ACCOUNTING PROCESSES

Action Steps	Responsibilities
1. Include criteria in implementation template for identification and evaluation of cross-functional impacts	EB Board of Directors, Mildeps
2. Develop criteria and metrics for field testing to ensure feedback on local business process impacts encountered in field testing is collected and evaluated	EB Board of Directors, Mildeps
3. Evaluate potential standards for LOA's for use in DoD e-Business	USD Comptroller, JECPO
4. Develop a pilot program to test LOA standards for e-Business systems	USD Comptroller, JECPO, functional staff
5. Identify potential e-Business data integrity problems with other legacy data elements	JECPO, DCIO

<u>RECOMMENDATION 5</u>: AS PART OF E-BUSINESS METHODOLOGY DEVELOPMENT, INCLUDE STANDARDS AND GUIDELINES TO ENSURE ADEQUATE SYSTEM TESTING IS INCORPORATED INTO PLANNING AND IMPLEMENTATION PROCESSES FOR ALL DOD E-BUSINESS INITIATIVES, AND TO ENSURE ADEQUATE FIELD-TESTING AND TRIALS ARE CONDUCTED PRIOR TO ROLLOUT

Technology Observations	Discussion
• Problems with credit card management reports and premature system timeouts were undetected until system deployment • EDI links between banks and DFAS were not resolved prior to pilot test, limiting validity of the pilot test • Slow ETA and PowerTrack start up and response times were not expected but frequently encountered in field environments	• Performance problems were not detected because of limited testing of the full system in live environments • Interrelationships between applications resulted in situations in which poor performance or usability problems for one application prevented use of the other (e.g., ETA and PowerTrack)

DOD SHOULD ENSURE COMPREHENSIVE TESTING IS PERFORMED FOR EMERGING E-BUSINESS DEPLOYMENTS

Action Steps	Responsibilities
1. Develop metrics and guidelines for all aspects of system testing to be included in Implementation Plan and IT Architecture/Information Security Impact Assessment templates	JECPO, JITC, EB Board of Directors
2. Develop metrics and guidelines for all aspects of field testing and trials to be included in Implementation Plan and IT Architecture/Information Security Impact Assessment templates	JECPO, JITC, EB Board of Directors

RECOMMENDATION 6: ENSURE DOD (E.G., GIG) ARCHITECTURES INCLUDE E-BUSINESS IT CAPABILITIES REQUIRED BY DOD

RECOMMENDATION 7: IMPLEMENT AN END-TO-END PERFORMANCE MONITORING CAPABILITY TO SUPPORT E-BUSINESS SYSTEMS

RECOMMENDATION 8: ESTABLISH FORMAL FEEDBACK MECHANISM TO CAPTURE AND RESOLVE QUALITY OF SERVICE ISSUES WITH COMMERCIAL PARTNERS

Technology Observations	Discussion
• End user desktop capabilities and network connectivity vary within base boundaries, and from base to base • Application performance at one location was clearly impacted by bottlenecks within the local base network • Performance information from multiple DoD and commercial sources cannot be easily obtained to routinely monitor system performance • Problem resolution requires coordinated action by base IT, DISA and DoD proponent and/or commercial partner technical staff	• Differences in base-level infrastructure could impact e-Business application availability and performance to target DoD user groups • Lack of an enterprise-wide monitoring capability limits ability to collect and correlate e-Business system performance data from DoD and commercial organizations • DoD and commercial partners need ongoing information exchange regarding application performance

DOD SHOULD ENSURE CONSISTENT DEPLOYMENT OF IT CAPABILITIES TO USERS, AND THE ABILITY TO MANAGE THESE CAPABILITIES ACROSS THE DEPARTMENT IN SUPPORT OF CROSS-CUTTING E-BUSINESS INITIATIVES

Action Steps	Responsibilities
1. Address the need for end-to-end performance monitoring capability in the GIG architecture	DCIO
2. Identify and evaluate alternatives for end-to-end performance measurement for the current DoD enterprise network environment	DISA
3. Establish requirements for network and application performance data from e-Business partners, e.g. US Bank	DISA
4. Develop metrics and guidelines to ensure user feedback is collected for all DoD e-Business initiatives	EB Board of Directors
5. Identify IT capabilities needed for DoD e-Business: Network, Processing/software, Security	JECPO, EB Board of Directors
6. Incorporate e-Business IT capabilities into appropriate (e.g., GIG) architecture	DCIO, EB Board of Directors

RECOMMENDATION 9: DEVELOP INCENTIVES TO ENCOURAGE IMPLEMENTATION OF, AND ACCOUNTABILITY FOR, E-BUSINESS BY DOD COMPONENTS

RECOMMENDATION 10: CREATE COMMUNICATIONS PLANS THAT LEVERAGE EXISTING AND EVOLVING E-BUSINESS GOVERNANCE STRUCTURES TO PROVIDE GUIDANCE AND DIRECTION TO DOD END-USERS WHEN FIELDING A MODIFIED OR REENGINEERED PROCESS

Change Management Observations	Discussion
• Some local organizations did not receive guidance and direction from command organizations to deploy and use Purchase Card (PC) system	• Inconsistent communication of value and benefits to end users hindered implementation of e-Business initiatives at local organizations
• Several shipping offices had incorrect browser configurations for PowerTrack, despite rollout strategy and technical guidelines from US Bank and OSD/Service program management	• Critical technical and operational guidance on e-Business initiatives does not reach end users, also hindering implementation and acceptance

DOD SHOULD IMPLEMENT COMMON METHODOLOGIES AND GOVERNANCE TO PROMOTE DEPARTMENT-WIDE E-BUSINESS INITIATIVES

Action Steps	Responsibilities
1. Develop and promote incentive programs for DoD Components	USD Comptroller, EB Board of Directors
2. Assess performance of specific e-Business initiatives across the DoD semiannually with a common set of metrics	EB Board of Directors, DoD CIO
3. Define specific communications roles and responsibilities for the EB Board of Directors and Component EB offices for information dissemination	EB Board of Directors
4. Define metrics and guidelines for program promotion for Implementation Plan template	EB Board of Directors

<u>RECOMMENDATION 11</u>: DEVELOP A DOD-LEVEL TRAINING PLAN TO ENSURE ADEQUATE TRAINING IS INCORPORATED INTO PLANNING AND IMPLEMENTATION PROCESSES FOR ALL DOD E-BUSINESS INITIATIVES. ENSURE TRAINING IS TAILORED TO THE E-BUSINESS APPLICATION, TARGET USER COMMUNITY, BUSINESS PROCESS, AND LOCAL ENVIRONMENT

Change Management Observations	Discussion
• Rollout delays between training and application deployment reduced training value	• Training approaches and techniques were not matched to the needs of the target user communities
• Effectiveness of "Train-the-Trainer" approach has been limited by technical skill levels of local managers and infrequent usage by some cardholders	• Multiple training techniques and methods are available to support potential users (on line support, CDROM, classroom training, distance learning)
• Army and Navy shippers received separate, independent ETA and PowerTrack training that did not fully illustrate the capabilities of both systems when used together on a shipment	• Training requirements for user communities are governed by multiple factors - User familiarity with and exposure to modernized business processes - Complexity of business processes - User IT skills - Application ease of use and complexity

TRAINING APPROACHES NEED TO BE MATCHED TO THE CHARACTERISTICS OF TARGET USER COMMUNITIES FOR E-BUSINESS SYSTEMS

Action Steps	Responsibilities
1. Create metrics and guidelines for training in the e-Business assessment template to ensure investments, user effectiveness, business process alignment, and cross-functional impacts are included in training plans	DoD CIO, JECPO, EB Board of Directors
2. Create metrics and guidelines for training in the e-Business Implementation Plan template to ensure content and delivery media availability, cross-functional process interactions, and coordination with system rollout	DoD CIO, JECPO, EB Board of Directors

RECOMMENDATION 12: ESTABLISH STANDARDS AND GUIDELINES FOR DOD-WIDE INFORMATION SECURITY COMPLIANCE FOR E-BUSINESS INITIATIVES

RECOMMENDATION 13: DOCUMENT AND RECONCILE SECURITY ISSUES FOR EACH E-BUSINESS INITIATIVE AT THE DEPARTMENT LEVEL TO ENSURE VISIBILITY AND AWARENESS OF COMPLIANCE TO LOCAL SECURITY ORGANIZATIONS

Security Observations	Discussion
• Some installations hesitated to implement PowerTrack because of security concerns	• Independent interpretation and implementation of DoD Information Assurance policies by IT organizations can lead to denied access to e-Business applications
• Due to autonomy of local organizations, IT management at multiple levels had independently implemented security directives from DoD and the Services at the WAN, MAN, and Base levels, resulting in multiple points of potential service denial	• DoD organizations need to be assured that COTS software provided and maintained by commercial partners meets all appropriate DoD and Service Information Assurance requirements
• Base-level decision making for local access control interrupted connectivity to PowerTrack at one location because of observed server-initiated connections	• DoD needs to ensure balance and consistency in the application of IA policies and regulations to e-Business COTS software

DOD SHOULD IMPLEMENT A COMMON SET OF INFORMATION SECURITY AND IA STANDARDS FOR E-BUSINESS INITIATIVES, AND A SCREENING METHODOLOGY FOR NEW INITIATIVES TO BOTH DEMONSTRATE AND ENSURE COMPLIANCE

Action Steps	Responsibilities
1. Compile, validate, and maintain e-Business INFOSEC requirements based on existing certification processes, information security directives, and other sources	DoD CIO
2. Create metrics and guidelines to ensure security compliance of e-Business initiatives throughout program life cycles	DISA, JTF-CND, JECPO

IMPLEMENTATION OF E-BUSINESS SOLUTIONS AND SERVICES THROUGHOUT THE DOD ENTERPRISE REQUIRES A NEW APPROACH TO BUSINESS TRANSFORMATION AND TECHNOLOGY DEPLOYMENT

- This quick look study has identified specific challenges faced by two e-Business initiatives in the implementation of COTs web-based applications supporting a commercial partner's service; these challenges include:
  - Business process impacts
  - Training
  - System performance monitoring
  - System testing
  - Security
- These challenges emerged even though program managers for these initiatives employed existing implementation methodologies for software systems
- These e-Business initiatives represent a new model to DoD, whose characteristics can contribute to potential problems for program managers, such as:
  - Size of user population
  - Role of DoD components and commercial partners in delivering services
  - Software ownership rights
  - Security
- The Department needs a new strategy and implementation methodology for e-Business web-based applications, based on existing guidance with appropriate enhancements, to equip functional program managers across the Department for future initiatives
- The goal of this new approach will be to ensure quality of service to the end user by defining how both Departmental and commercial partners provide the necessary support during implementation and throughout the life cycle of e-Business programs

MOVING FORWARD, TO ENSURE SUCCESS WITH E-BUSINESS INITIATIVES DOD SHOULD DEFINE MEASURABLE RESPONSIBILITIES FOR DOD COMPONENTS AND COMMERCIAL PARTNERS FOR E-BUSINESS IMPLEMENTATION AND OPERATION

Commercial Partner Responsibilities	DoD Component Responsibilities	Joint DoD/Commercial Partner Responsibilities
• Application availability • Application response time • Operation of functionality • System performance under load conditions • Information security compliance • Data integrity • Configuration management • Useability/ User interface • Training material development and delivery • Customer/ end user support	• Business process impact assessment and resolution • Monitoring commercial provider performance against service level targets • DoD IT infrastructure impact assessment • DoD information security impact assessment • Monitoring DoD infrastructure performance • Gaining buy-in from and providing direction to subordinate organizations on implementation efforts • Collect user feedback on utility and benefits of the e-Business initiative • Establish quality if service metrics for auditors	• Joint interoperability testing (e.g., EDI links) • Integration testing • Field testing • Site cutovers • Program communications • Implementation tracking • Review feedback on utility and benefits of the e-Business initiative